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The Motherhood Penalty: Not so Black and White

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A thesis submitted in partial fulfillment of the requirements for the Master of Science degree in Psychology

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Abstract

Working mothers experience discrimination in hiring, promotion, salary, and training opportunities. This “motherhood penalty” occurs, in part, due to stereotyped family role expectations: working mothers are often perceived as the primary caregivers in their families and are assumed to have additional domestic responsibilities compared to fathers or non-parents. Notably, when women are framed as breadwinners rather than caregivers, they do not experience a motherhood penalty. However, this line of research largely focuses on the experiences of White women and is lacking an intersectional approach. Using an experimental research design, I examined how candidate race and parenthood impacted breadwinner perceptions and promotion ratings. I hypothesized a moderated mediation model in which Black mothers would be more frequently perceived as breadwinners, mitigating the motherhood penalty they faced compared to White women. In line with previous research, motherhood status was negatively related to promotion recommendation. However, breadwinner perceptions did not explain this relationship and there was no effect of candidate race. Notably, my supplementary findings showed that mothers received lower anticipated job availability ratings compared to non-mothers, but only when they were White. These results suggest that women’s intersectional identities have important outcomes for their success in the workplace.

Keywords: Motherhood Penalty, Breadwinning, Race.

Summary for Lay Audience

Working mothers earn lower wages, are less likely to be hired and promoted, and are less likely to be recommended for valuable training opportunities compared to fathers or women without children. These outcomes are collectively described as the “motherhood penalty”. The motherhood penalty is partly influenced by family role expectations. Fathers are often stereotyped as the main financial providers in their households, implying that they are very committed to work. In contrast, working mothers are perceived as caregivers who are more committed to managing domestic responsibilities for their families. Notably, when women are framed as breadwinners rather than caregivers, they do not experience a motherhood penalty. However, research has mostly focused on the experiences of White women and has not addressed how motherhood expectations might differ based on race. In one study, mothers who engaged in paid labour outside of the home were perceived as less hardworking compared to stay-at-home mothers who did not work for pay – but only when they were White. The reverse was true for Black women, meaning that stay-at-home Black mothers were perceived as less hardworking compared to Black mothers who worked for pay outside of the home. Bringing together two different lines of research, I proposed that Black mothers may be more highly perceived as breadwinners compared to White women. I expected that this would alleviate the motherhood penalty for Black women. I tested my hypotheses in a controlled experimental study, in which participants evaluated a candidate for a promotion. Consistent with previous research, I found that mothers were less likely to be promoted compared to non-mothers. However, there was no effect of race on breadwinner perceptions. In addition, breadwinner perceptions did not explain the relationship between motherhood and promotion. I did find that race and motherhood impacted anticipated job availability ratings. Specifically, White mothers received lower availability ratings compared to White non-mothers, whereas Black mothers received equivalent ratings to Black non-mothers. Overall, better understanding the impact of our complex identities is important for understanding workplace outcomes for women.

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The Motherhood Penalty: Not so Black and White

Women experience many forms of discrimination in the workplace (e.g. Rosette et al., 2019), and they may face additional penalties for being a parent. Specifically, working mothers earn lower wages, are less likely to be hired and promoted, and are less likely to be recommended for training opportunities compared to fathers or women without children (Aranda & Glick, 2014; Avellar & Smock, 2003; Bear & Glick, 2017; Budig & England, 2001; Cuddy et al., 2004; England et al., 2016; Fuegen et al., 2004; Heilman & Okimoto, 2008; Jee et al., 2018; Waldfogel, 1997). These experiences are collectively described as the “motherhood penalty”. To date, experimental research has focused on how the motherhood penalty impacts White women in the United States (e.g. Bear & Glick, 2017; Cuddy et al., 2004; Fuegen et al., 2004; Gungor & Biernat, 2008; Heilman & Okimoto, 2008). Consequently, there is a pertinent need for research that takes an intersectional approach and investigates how racial identity influences these outcomes. Intersectional research suggests that an individual’s identity is made up of overlapping social categories, which intersect to “create a unique experience that is separate and apart from its originating categories” (Rosette et al., 2019, p. 3). In other words, social categories do not operate in isolation, and there may be meaningful differences in outcomes based on the interaction of these categories. In fact, intersectional research demonstrates that gendered workplace outcomes for women do vary based on race (see Rosette et al., 2019 for a review).

The present research will focus on the intersectionality between race and motherhood status. First, I will provide a brief overview of how women’s participation in the paid labour market has changed over time, reflecting a cultural shift in family structure – from a male-breadwinner/female-caregiver model to a dual-worker model. Next, I will describe the specific motherhood penalties found in research. Although experimental studies have not yet examined the intersectionality between race and motherhood status, wage analyses suggest that Black mothers experience a smaller motherhood wage penalty compared to White mothers (Budig & England, 2001; England et al., 2016; Parrott, 2014; Waldfogel, 1997). To elucidate these findings, I will then discuss why the motherhood penalty occurs, focusing on gendered family role expectations for women and men. Specifically, research suggests that the penalty may occur because mothers are typically perceived as caregivers, for whom expected domestic

responsibilities ostensibly conflict with expectations of paid workers (Aranda & Glick, 2014; Bear & Glick, 2017; Ridgeway & Correll, 2004). In one study, mothers who are instead perceived as breadwinners do not experience a motherhood penalty in various workplace outcomes (Bear & Glick, 2017). However, this line of research has focused on perceptions of White women. In contrast, Black women may face different motherhood stereotypes that do not conflict with paid work or breadwinning (Blair-Loy & Dehart, 2003; Cuddy & Wolf, 2013; Dow, 2015, 2016a, 2016b; Higginbotham & Weber, 1992).

In the present research, I will investigate whether differences in Black and White women's perceived family roles explain women's workplace outcomes. Thus, this study fills a gap in previous research, and the expected findings have important implications for understanding the nuances of workplace discrimination in the United States and similar countries.

Women's Participation in the Paid Labour Force

Historically, women's participation in the paid labour force has been lower than men's participation (U.S. Department of Labor, 2018a). Most households initially followed a male-breadwinner/female-caregiver model in which men were the primary earners and women were the primary caregivers for their families (Bear & Glick, 2017; Chesley, 2017; DeRiviere, 2008; Harkness et al., 1997). During this time, women's earnings were largely perceived as "pin money" that contributed very little to their family's total income (DeRiviere, 2008; Harkness et al., 1997). Since the 1970s, the male-breadwinner model has been replaced by a prevailing dual-worker model, where both women and men engage in paid full-time work (Kramer et al., 2013). Indeed, many women's earnings are now considered essential for their families (DeRiviere, 2008; Harkness et al., 1997; Wang et al., 2013).

However, average wages in female-dominated occupations are often lower than wages in male-dominated occupations, even after controlling for education and work skills (Cohen & Huffman, 2003; England, 2010). Owing to this devaluation of female-dominated jobs, women have increasingly entered more lucrative male-dominated fields (England, 2010). Yet, even amongst these jobs, women are often under-represented in more valued or higher-status roles (see Rosette et al., 2019 for a review). Due to these and related factors, the gender wage gap still exists, and scholars argue that improvements in gender equality have stalled in recent decades (e.g. England,

2010; England et al., 2020). Nonetheless, the overall ratio between women's and men's wages in the United States has improved, rising from 60.7% in 1960 to 80.5% in 2017 (U.S. Department of Labor, 2018a).

Overview of the Motherhood Penalty

Parenthood exacerbates wage penalties for women. Research shows that when compared to women without children, the wage penalty for mothers in the United States has not diminished since at least 1975, and may have actually increased (Avellar & Smock, 2003; Jee et al., 2018). However, researchers often use different nationally representative datasets, and reported estimates vary. For instance, one study using 1982-1993 data from the National Longitudinal Survey of Youth reported a 5% wage penalty per child when controlling for total years of employment, part-time employment, and employment breaks (Budig & England, 2001). Another study using 1986-2014 data from the Panel Study of Income Dynamics reported an 8% wage penalty for mothers of one child when controlling for educational attainment and labour market experience, with greater, non-linear penalties for additional children (Jee et al., 2018). Notably, correlational wage analyses have also indicated an effect of race on the motherhood wage penalty, such that Black mothers in the United States experience a smaller motherhood wage penalty compared to White mothers (Budig & England, 2001; England et al., 2016; Glauber, 2007; Parrott, 2014; Waldfogel, 1997). Experimental research suggests that breadwinner perceptions mitigate the motherhood penalty for White mothers, but this effect has not been investigated for Black mothers specifically.

For general comparison, working fathers do not typically face parenthood penalties. Indeed, men may even experience a fatherhood bonus (e.g. Bear & Glick, 2017; Cuddy et al., 2004; Glauber, 2008), especially amongst highly educated, married White men in professional occupations (Hodges & Budig, 2010). Although men may increase their work hours when they become fathers, research suggests that the fatherhood wage bonus occurs even when accounting for work hours (Glauber, 2008; Hodges & Budig, 2010). I will not extensively discuss fatherhood, instead limiting my analysis to race and motherhood.

Although research examining national wages can only report correlations, experimental research has also demonstrated motherhood penalties in hiring, promotion, and training opportunities. In

these studies, samples of undergraduate students (Aranda & Glick, 2014; Cuddy et al., 2004; Fuegen et al., 2004; Gungor & Biernat, 2008), MBA students (Heilman & Okimoto, 2008), or working professionals recruited from Amazon Mechanical Turk (MTurk; Bear & Glick, 2017) evaluated hypothetical candidates for a range of positions. Mothers received lower salary offers compared to equally qualified fathers (Bear & Glick, 2017), and also received fewer hiring recommendations compared to equally qualified fathers (Aranda & Glick, 2014) or compared to women without children (Cuddy et al., 2004; Fuegen et al., 2004). Furthermore, mothers received lower promotion ratings compared to women without children (Cuddy et al., 2004; Fuegen et al., 2004) and fathers (Heilman & Okimoto, 2008). In contrast, hiring and promotion ratings did not differ for men based on parenthood (Cuddy et al., 2004; Fuegen et al., 2004; Heilman & Okimoto, 2008). Finally, mothers also received fewer recommendations for valuable training opportunities compared to equally qualified fathers (Aranda & Glick, 2014; Bear & Glick, 2017) and non-parents (Bear & Glick, 2017; Cuddy et al., 2004). In these studies, researchers used stereotypically White names or did not otherwise specify race for their hypothetical candidates.

The experimental studies discussed thus far showed a consistent motherhood penalty for a range of white-collar jobs, including general manager in industrial engineering (Aranda & Glick, 2014), product manager in the marketing department (Bear & Glick, 2017), consultant (Cuddy et al., 2004), immigration law attorney (Fuegen et al., 2004), and assistant vice president of financial affairs (Heilman & Okimoto, 2008). Although the motherhood penalty is theorized to exist across a broad range of occupations, fewer studies have examined this effect in blue-collar jobs, which are generally perceived as lower in status (e.g. factory worker; Gungor & Biernat, 2008). One study examining a blue-collar factory worker position found that penalties based on gender were more likely to occur compared to penalties based on parenthood (Gungor & Biernat, 2008). Specifically, women were less likely to be recommended for hire and were also perceived as less committed compared to male applicants, regardless of parental status; however, mothers were uniquely perceived as less available for work compared to women without children and fathers. It is important to note that this study utilized a male-typed job. Indeed, Gungor and Biernat (2008) found that participants who perceived the position as high in masculinity were less likely to recommend that women be hired. Further research is needed to investigate the motherhood penalty in a range of male and female-typed blue-collar jobs. Despite this research

gap, the primary focus in the present research is on the intersectionality of motherhood and race. Thus, participants will evaluate a hypothetical candidate for a white-collar position, as there is a range of research demonstrating that the motherhood penalty occurs for these jobs.

Why Does the Motherhood Penalty Occur?

Ridgeway and Correll (2004) suggest that the motherhood penalty may occur due to conflicting perceptions of the “good mother” and the “ideal worker”. Specifically, the good mother is expected to be fully devoted to her children (Ridgeway & Correll, 2004). In contrast, the ideal worker is fully committed to organizational demands and places these before personal and family needs (Acker, 1990). One study found that mothers and fathers were both rated as less committed to work than a hypothetical ideal worker, but mothers in particular were evaluated more harshly than fathers (Fuegen et al., 2004). In another study, researchers manipulated gender and work-devotion for equally qualified job applicants (Aranda & Glick, 2014). Mothers who expressed family-devotion experienced a motherhood hiring penalty, receiving lower hiring ratings compared to work-devoted mothers and fathers, as well as family-devoted fathers. However, this motherhood penalty was mitigated for mothers when they were framed as work-devoted rather than family-devoted.

Notably, women and men may also have different strategies for coping with ideal worker demands. In Reid’s (2015) qualitative study, interviews with white-collar employees at an elite consulting firm showed that many employees experienced conflict between their experienced professional identity and the expected professional identity. The expected professional identity was similarly perceived across all employees and was consistent with the demands of the ideal worker image. Reid (2015) found that conflict between experienced and expected identities occurred for many employees, including fathers and non-parents. However, based on performance evaluations among employees experiencing this conflict, fathers and non-parents were better able to “pass” as ideal workers compared to mothers. In addition, mothers were more likely to take advantage of formal workplace accommodations that required disclosing their family commitments, thus revealing their experienced professional identity. In contrast, fathers and non-parents utilized more informal strategies that did not require disclosing their experienced professional identity. Reid (2015) suggests that gender differences occur not in

whether or not the ideal worker image is embraced, but in how mothers and fathers cope with the demands associated with the role.

Overall, mothers experience discrimination due to an apparent conflict between their commitments to family and their commitments to the workplace (Aranda & Glick, 2014; Bear & Glick, 2017; Ridgeway and Correll, 2004). Moreover, the ideal worker role has been historically perceived as more congruent with the male role, and perceptions of ideal workers may not align with perceptions of mothers (Acker, 1990; Aranda & Glick, 2014; Bear & Glick, 2017; Fuegen et al., 2004). As will be discussed in the next section, gendered expectations of breadwinners also demonstrate conflict between mother's roles in the family and the workplace.

Breadwinner Perceptions

As previously described, breadwinners have historically been men, whereas caregivers, the main providers of unpaid domestic labor, have been women (Bear & Glick, 2017; Chesley, 2017). However, the formerly dominant male-breadwinner/female-caregiver model has been replaced by a prevailing dual-worker model (Kramer et al., 2013). Moreover, families with mothers who are sole or primary-breadwinners have increased from 11% in 1960 to 40% in recent estimates (Wang et al., 2013). Nonetheless, men in dual-worker family structures are still typically perceived as primary breadwinners (Bear & Glick, 2017; Chesley, 2017). In fact, a recent public opinion survey by the Pew Research Centre found that about 71% of respondents believed that men must be able to financially provide for their families in order to be considered a good partner (Parker & Stepler, 2017). In contrast, only about 32% of respondents believed that women must be able to financially provide for their families in order to be a good partner.

The perception of working mothers as primary caregivers in dual-worker family structures is also rooted in practice. Indeed, working mothers are often asked how they are able to balance their careers with their domestic responsibilities, whereas men are praised for engaging in minor domestic duties (e.g. Deutsch & Saxon, 1998). Women continue to perform childcare, housework, and domestic tasks at disproportionately greater rates compared to men (e.g. Wang et al., 2013). This reflects what is commonly understood as the "second shift" for women (Hochschild, 2003). For example, interviews with White, middle-class, dual-worker couples found that women in these families had more responsibility over complex family planning,

scheduling, and organizing compared to men (Daly, 2002). As reported by Daly (2002), one interviewee stated: “My husband does not always see the work that needs to be done. He will do it if I ask him. But then that makes my role all the more, because I get all the guilt associated with, shoot I have to bug him” (p. 337). Thus, in some instances, even the responsibility to ensure equality in domestic responsibilities falls on women.

Gendered expectations of breadwinners and caregivers are based on household responsibilities, yet they influence workplace outcomes. Bear and Glick (2017) found that working mothers who were stereotypically perceived as caregivers received lower salary offers compared to working fathers who were assumed to be breadwinners. Mothers also received fewer opportunities for leadership training compared to non-parents and fathers. However, the motherhood penalty was mitigated when women were framed as breadwinners rather than caregivers, or, compared to when their family role was unspecified. Specifically, breadwinning mothers received equivalent salary and leadership training offers compared to women without children and both breadwinning and role-unspecified fathers.

Bear and Glick’s (2007) study involved experimental research utilizing an MTurk sample to evaluate a hypothetical candidate for a product manager position in a marketing department. Their findings are supported by a field study conducted by Manchester et al. (2019), who examined a sample of managerial employees from the headquarters of a Fortune 500 company. Married employees self-reported whether they or their partners were the primary-breadwinner, and employees who were not the primary-breadwinner were labeled secondary-breadwinners for the purpose of the study. Manchester et al. (2019) found that primary-breadwinners received a pay premium, such that they earned more than all other employees. In contrast, secondary-breadwinners received a pay penalty compared to primary-breadwinners, dual-breadwinners, and non-partnered employees, but only when they were women. Importantly, there were no differences in performance (evaluated during the organization’s annual review process) between primary and secondary breadwinners. Although causality between breadwinner role, performance, and pay could not be determined based on the nature of the research, Manchester et al.’s (2019) field study together with Bear and Glick’s (2017) experimental study suggest that positive primary-breadwinner effects are not limited by gender, whereas caregiver or secondary-breadwinner effects are negative and experienced largely by women.

Thus, research demonstrates that mothers experience workplace penalties due to their stereotyped caregiver role (Aranda & Glick, 2014; Ridgeway and Correll, 2004), and framing mothers as breadwinners can mitigate these penalties (Bear & Glick, 2017). However, it is unclear whether these effects hold across more diverse populations of mothers. In their study, Bear and Glick (2017) did not specify the job candidates' racial identities and used stereotypically White names (e.g. Lisa and Gary Anderson). Moreover, the field study by Manchester et al. (2019) was conducted in a company where 92% of the employees were White. In addition, most research on the ideal worker image, as it relates to the motherhood penalty, has focused on perceptions of White employees (Fuegen et al., 2004; Reid, 2015). I am specifically interested in examining how the motherhood penalty is experienced by Black mothers who might be stereotyped differently than White mothers, and who might also face additional or different employment discrimination based on their racial identities.

Breadwinner Perceptions for Black Women

Most experimental research comparing mother and worker identities has focused on perceptions of White women, ignoring the experiences of Black women. Research on middle-class Black women in professional careers has utilized interviews (Dow, 2015, 2016a, 2016b; Higginbotham & Weber, 1992) and survey methods (Blair-Loy & Dehart, 2003) to suggest that motherhood expectations differ for Black women. In contrast to White women, Black women were historically more likely to grow up in a household where mothers worked outside of the home, establishing a norm of working motherhood (Blair-Loy & Dehart, 2003; Dow, 2016b). Cultural expectations of Black mothers appear to dictate that they be financially independent mothers (Dow, 2016b). For some women, Black parents play a role in socializing these expectations, emphasizing the importance of employment and economic self-reliance (Higginbotham & Weber, 1992); notably, this may be related to socioeconomic status (Dow, 2016b). Black women may also benefit from different support networks, including help in taking care of their children from family or community members (Dow, 2016a, 2016b), as well as increased household support from husbands (Parrott, 2014).

Furthermore, research has found that while research participants tend to hold negative attitudes about working mothers (e.g. Benard & Correll, 2010; Brescoll & Uhlmann, 2005), their

perceptions differ for Black mothers. In one study, mothers who engaged in paid labour outside of the home were perceived as less hardworking compared to stay-at-home mothers who did not work for pay, but only when they were White (Cuddy & Wolf, 2013). The reverse was true for Black women, such that stay-at-home Black mothers were perceived as less hardworking compared to Black mothers who worked for pay outside of the home. In Dow's (2015) interviews with Black mothers, one respondent stated: "I don't think it is really acceptable for Black women who are professional women to stay at home . . . You just don't see it that much and I often wonder what the stigma of that is. . . Black women are portrayed as welfare recipients with a bunch of kids, so I think the assumption could be that you are staying at home because you are one of "them" as opposed to you chose to be home to raise your child" (p. 36). As such, Black women have to navigate problematic racial stereotypes that depict them as lazy if they remain stay-at-home mothers, whereas the same may not be true for White women.

Overall, perceptions of the 'good' Black mother identity seem to include paid work and breadwinning, unlike perceptions of the 'good' (stay-at-home) White mother. In fact, while motherhood is generally associated with lower employment rates, this effect is stronger for White compared to Black women (Florian, 2018). Consequently, reported race differences in the motherhood penalty may be due to dissimilar expectations and lived experiences of Black and White mothers.

However, it is important to note that Black mothers may also have to navigate assumptions about their marital status, which may in turn influence the motherhood penalty. Interviews with employers showed that Black mothers were often stereotyped as single parents, and this resulted in two conflicting perceptions (Kennelly, 1999). Specifically, some employers perceived Black mothers as more reliable and hard-working due to their need to support their families, whereas others perceived them to be less committed to work due to their family distractions. More recent research found that among mothers who were sole or primary-breadwinners, married mothers were more likely to be White, whereas single mothers were more likely to be Black or Hispanic (Wang et al., 2013). To further investigate these elements, the proposed study will not specify mothers' marital status, and will evaluate perceptions of Black and White mothers as single parents. This is in contrast with previous experimental studies on the motherhood penalty which typically framed mothers as married.

Race Discrimination

Accounting for racial discrimination in hiring practices further complicates this issue. A recent meta-analysis of field experiments demonstrates that racial hiring discrimination has not diminished over time since at least 1989 (Quillian et al., 2017). Although this meta-analysis did not account for potentially substantial drops in hiring discrimination during the civil rights era that occurred before 1989, scholars suggest that these findings demonstrate a persistent, subtle form of racial discrimination (King et al., 2006; Quillian et al., 2017). In a field experiment, researchers using fictitious resumes to apply to help-wanted advertisements found that Black applicants received significantly fewer callbacks compared to equally qualified White applicants for both women and men applicants (Bertrand & Mullainathan, 2004). In an experimental study, resumes of Black applicants were evaluated less positively than identical resumes of White applicants (King et al., 2006). In both studies, the researchers varied resume quality and found that improved quality benefited White, but not Black, applicants (Bertrand & Mullainathan, 2004; King et al., 2006). Experimental research has also found that Black applicants were perceived as more suitable for low status occupations compared to White applicants (King et al., 2006; Stewart & Perlow, 2001). In the latter study, this effect occurred only for participants with more negative attitudes towards Black individuals (Stewart & Perlow, 2001), whereas researchers in the former study did not evaluate such attitudes (King et al., 2000).

Moreover, Black individuals continue to earn less than White individuals across both women and men (England et al., 2016; Parrott, 2014; U.S. Department of Labor, 2018b). Among women, this effect has been shown to occur even when controlling for similar qualifications within the same occupations (Kim, 2002). In addition, Black women have historically been segregated into less desirable, lower-paying jobs (see Rosette et al., 2019 for a review). Combined with the research examining race differences in the motherhood wage penalty, these findings suggest that White women may generally benefit from their racial identities, unless they are working mothers. The outcomes for Black women are less clear due to the potentially contrasting effects of racial discrimination and motherhood stereotypes.

Overview of the Studies

The present research encompassed two pilot studies and one core study. I will provide a brief overview of each study and then outline complete study methods and results in the following sections. (See Appendix A for Ethics Approval documents for all studies).

The first pilot study was conducted to select candidate names for the core study. I generated a list of race-stereotypical names to determine names that are perceived as Black and White, and also examined class perceptions associated with these names. From this pilot study, I selected two names for the core study: one perceived as Black and one perceived as White, similarly perceived on socioeconomic status. The second pilot study was conducted to examine both the saliency of my experimental parenthood manipulation and the impact of motherhood status on a variety of outcomes, including promotion ratings. The manipulation and dependent variables were then used in my core study. I did not examine race in this second pilot study. Finally, the core study examined whether breadwinner perceptions and promotion ratings varied based on race and parenthood. I expected that Black mothers would be more frequently perceived as breadwinners, mitigating the motherhood penalty they face compared to White women. I also examined whether single mother perceptions impacted these outcomes.

Pilot Study 1

The purpose of this study was to select a pair of race-stereotypical names for the core study. In the real world, race is salient in a way that cannot be replicated in experimental studies using a written scenario design. As such, previous studies examining race have successfully used race-stereotypical names to indicate racial identity (e.g. Bertrand & Mullainathan, 2004; King et al., 2006). However, research suggests that Black names may be associated with a particular socioeconomic status (SES). For instance, names of White individuals are more likely to be incorrectly perceived as Black when the names are associated with lower SES (Barlow & Lahey, 2018), whereas names of Black individuals are more likely to be correctly perceived as Black when the names are associated with a lower SES (Gaddis, 2017). In addition, Black individuals from a low SES background are more likely to possess a distinctly Black name (Fryer & Levitt, 2004). It is possible that in choosing a race-stereotypical name to represent a Black individual, I may inadvertently imply information about SES. Notably, studies have found that Black

applicants are perceived as more suitable for low status occupations compared to White applicants (King et al., 2006; Stewart & Perlow, 2001). Thus, the more specific purpose of the first pilot study was to select a pair of names that were respectively perceived as Black or White yet perceived similarly with respect to socioeconomic status.

Method

Participants and Procedure

I recruited a convenience sample of participants from my personal and professional network to complete a 5-minute online survey on a voluntary basis. If interested, they could self-select into the study by clicking on the survey link. The link re-directed participants to Qualtrics, which is an online survey platform that is commonly used by researchers to create and distribute surveys. Participants reviewed a total of 16 names and answered two questions regarding race and class perceptions for each name. A total of 32 participants completed the survey. (See Appendix B for the letter of information and consent and Appendix C for the recruitment script).

Materials

Race-stereotypical names. The race-stereotypical names were largely derived from previous literature (Bertrand & Mullainathan, 2004; Gaddis, 2017) as well as a dataset of U.S. mortgage applications from 2010 (Tzioumis, 2018), which was specifically created to provide researchers with a comprehensive resource of first names. Additional names were selected from personal experience and online name registries. The final list of names included: Aliyah, Diamond, Ebony, Jada, Latoya, Nia, Precious, and Taniesha (for the stereotypically Black names) as well as Amy, Brittany, Debbie, Jane, Katie, Laurie, Molly, and Stacey (for the stereotypically White names).

Perceived racial identity. Race perceptions were assessed using a single item: “Which racial identity does this name most likely represent?”. Following the format provided by the United States Census Bureau, response options included 1 = *White (non-Hispanic)*, 2 = *White (Hispanic)*, 3 = *Black (non-Hispanic)*, 4 = *Black (Hispanic)*, 5 = *Other*, and 6 = *Don’t know*.

Perceived SES. Class perceptions were assessed using a single item: “Please indicate the socioeconomic status that you associate with this name”. Response options included 1 = *Working class*, 2 = *Middle class*, 3 = *Upper class*, 4 = *Don’t know*.

Results and Discussion

Participants reported race and SES perceptions for each name (see Table 1 for race perceptions and Table 2 for SES perceptions). First, I recoded the variables. As before, 1 = *Working class*, 2 = *Middle class*, and 3 = *Upper class*; the 4 = *Don’t know* response was eliminated. I conducted a Friedman test to analyze the data and found a statistically significant difference in perceived SES for the presented names, $\chi^2(15) = 40.03, p < 0.001$.

Next, I selected names for further analysis. In particular, I was aiming for a pair of names that were respectively perceived as Black or White yet perceived similarly with respect to socioeconomic status. I initially selected the names Jada and Laurie because they were perceived as similarly middle-class (56% and 59% respectively), but preliminary results from a test sample for the core study found that participants often perceived Jada as a White name. I instead examined the names Taniesha and Debbie. Based on the descriptive statistics, the name Taniesha was perceived as somewhat more working class (47%) than middle (44%) or upper class (3%); nonetheless, the perceptions of the name as working class were not quite as high as some of the other Black names (see Table 1). Moreover, Taniesha was perceived as a more explicitly Black name compared to Jada: 100% of participants perceived Taniesha as a Black name, and more specifically, 91% perceived this name as Black non-Hispanic. Similar to Taniesha, the name Debbie was perceived as somewhat more working class (38%) than middle (34%) or upper class (25%) and was appropriately perceived as a White name (97%). I conducted a post hoc Wilcoxon signed-rank test and found that there was no significant difference in perceived SES between the names Taniesha (*median* = 1.5) and Debbie (*median* = 2), ($Z = -1.83, p = 0.07$). As this was the desired result, Taniesha and Debbie were ultimately selected as suitable names for the final version of the core study.

Table 1
Perceived Race of Names (% of Respondents)

	White (non-Hispanic)	White (Hispanic)	Black (non-Hispanic)	Black (Hispanic)	Other	Don't Know
Black names						
Aaliyah	6%	3%	47%	9%	31%	3%
Diamond	13%	3%	47%	13%	9%	16%
Ebony	3%	0%	84%	0%	0%	13%
Jada	3%	0%	66%	16%	6%	9%
Latoya	0%	0%	87%	13%	0%	0%
Nia	0%	13%	41%	19%	9%	19%
Precious	3%	0%	69%	13%	3%	13%
Taniesha	0%	0%	91%	9%	0%	0%
White names						
Amy	84%	3%	3%	3%	6%	3%
Brittany	81%	16%	3%	0%	0%	0%
Debbie	91%	6%	0%	0%	0%	3%
Jane	84%	13%	0%	0%	0%	3%
Katie	81%	13%	0%	0%	0%	6%
Laurie	84%	13%	0%	0%	0%	3%
Molly	84%	9%	0%	0%	0%	6%
Stacey	78%	6%	0%	0%	3%	13%

Table 2
Perceived Socioeconomic Status of Names (% of Respondents)

	Working class	Middle class	Upper class	Don't know
Black names				
Aaliyah	16%	66%	3%	16%
Diamond	63%	16%	6%	16%
Ebony	41%	34%	6%	19%
Jada	25%	56%	0%	19%
Latoya	68%	23%	3%	6%
Nia	19%	56%	6%	19%
Precious	72%	9%	6%	13%
Taniesha	47%	44%	3%	6%
White names				
Amy	0%	69%	25%	6%
Brittany	22%	53%	16%	9%
Debbie	38%	34%	25%	3%
Jane	16%	44%	28%	13%
Katie	16%	47%	31%	6%
Laurie	16%	59%	9%	16%
Molly	28%	44%	13%	16%
Stacey	25%	38%	25%	13%

Pilot Study 2

In most previous motherhood research, participants have been provided with explicit information about an applicant's parental status. This is often presented in an unrealistic manner, such as being listed under demographic information for job applicants (Bear & Glick, 2017; Heilman & Okimoto, 2008) or described outright in a blurb provided to participants (Aranda & Glick, 2014; Cuddy et al., 2004; Gungor & Biernat, 2008). By using a within-company promotion scenario in my study, I was able to use more subtle and realistic indicators of parenthood in both the core and second pilot studies. Additionally, in order to replicate and extend previous research, participants evaluated a hypothetical candidate for a white-collar product manager position (Bear & Glick, 2017). As such, the second pilot study was used to test the saliency of the experimental manipulation for parenthood status. I also examined the impact of motherhood status on a promotion recommendation rating scale as well as on additional dependent variables described below. I did not examine race in this pilot study. In line with previous research (Cuddy et al., 2004; Fuegen et al., 2004; Heilman & Okimoto, 2008), I expected that promotion ratings would vary based on parenthood status, such that:

Hypothesis 1: Mothers will receive lower promotion ratings compared to non-mothers.

In addition to promotion ratings, I also examined a few supplementary outcomes that tend to differ based on parenthood. For instance, participants often anticipate lower job commitment, achievement-striving, and job availability when applicants are parents compared to when they are not (Fuegen et al., 2004; Heilman & Okimoto, 2008). In addition, parents tend to be viewed as warmer than non-parents (Cuddy et al., 2004; Gungor & Biernat, 2008). As such, I outlined the following supplementary hypotheses:

Hypothesis 2: Mothers will receive lower job commitment ratings compared to non-mothers.

Hypothesis 3: Mothers will receive lower achievement-striving ratings compared to non-mothers.

Hypothesis 4: Mothers will receive lower job availability ratings compared to non-mothers.

Hypothesis 5: Mothers will be perceived as higher in warmth compared to non-mothers.

Method

Participants

I recruited an undergraduate sample of participants from a Canadian university to complete a 15-minute online study in exchange for a course research credit. They were told they would be reviewing a job applicant's file and answering a series of questions regarding their perceptions of the applicant. They were also informed that this was a pilot study to test measures that would be used in a subsequent study. If interested, they could self-select into the study by clicking on the survey link, which re-directed them to Qualtrics (see Appendix D for the letter of information and consent and Appendix E for the recruitment script). A total of 100 participants were recruited. After removing respondents who failed the parenthood manipulation check, the final sample was comprised of 78 participants (69% women) who ranged in age from 17 to 28 years old ($M_{Age} = 18.91$, $SD_{Age} = 1.58$). Most were not employed in a full-time job at the time of the survey (99%) and did not report ever holding a job that involved recruiting and/or hiring people (91%).

Procedure and Study Design

Participants were asked to play the role of a Human Resources professional evaluating an internal candidate, Sarah Johnson, for a head product manager position in the marketing department. The study used a between-subjects design. Participants were randomly assigned to one of two conditions, thus evaluating either a mother or a female non-parent job candidate. They were shown a job description and were then asked to review Sarah's Applicant File (Appendix F). The Applicant File included Sarah's resume, her most recent performance review, her official Human Resources file, and brief interviewer notes from her interview for the Head Product Manager position. Each item was presented on a separate page, in the order described here, and participants were unable to move back once they had progressed to the next page. These materials were identical across the two conditions except with respect to the parenthood indicators (see more below). Once they reviewed the Applicant File, participants answered a series of questions, further described below.

Materials

Applicant File. I made some key choices in how I presented the job candidate. To achieve sufficient variance on the dependent variables and replicate the nuances of the real-world, I did not want the candidate to be viewed as overly positive. As such, I used ambiguous language whenever possible. For example, in her performance review (Appendix F), Sarah was described as demonstrating “*expected* performance” and “*satisfactory* growth”. Moreover, she “meets *most* of her yearly goals” and had an “*acceptable*” attendance record”. I also manipulated parenthood in three different ways (Appendix F). First, the resume indicated that Sarah volunteers either with a Parent Teacher Association or at a local animal shelter. Second, the Human Resources file indicated that Sarah took either an approved maternity leave or an approved leave for jury duty. Third, the interview notes indicated that Sarah was asked about her greatest weakness. Her response indicated that she struggled with managing multiple commitments either when her first daughter was born or when she was first hired. All other information was identical between the parent and non-parent conditions. Previous studies have typically mentioned that the parent has two young children. Although my manipulations could not explicitly describe this information in order to remain realistic and subtle, the nature of the information provided in the parent condition (i.e., dates of maternity leave, volunteer activities, and interview notes) implied that the candidate was a mother with at least one young child.

Promotion Recommendation. After reviewing the Applicant File, participants completed the promotion recommendation measure (Appendix G). Promotion recommendation was assessed using a single item: “How likely are you to recommend Sarah for promotion?”, rated on a 1 = *Extremely unlikely* to 7 = *Extremely likely* scale (adapted from Cuddy et al., 2004; Fuegen et al., 2004).

Perceived Commitment. Then, participants completed the 3-item anticipated job commitment measure (Appendix H; Heilman & Okimoto, 2008). A sample item includes: “If hired for the Head Product Manager position, how likely is it that Sarah would be very committed to the company?”, rated from 1 = *Extremely unlikely* to 7 = *Extremely likely*. Higher average scores on this scale indicate greater anticipated job commitment.

Perceived Achievement. Next, participants completed the 3-item anticipated achievement-striving measure (Appendix I; Heilman & Okimoto, 2008). A sample item includes: “If hired for the Head Product Manager position, how likely is it that Sarah would have high career aspirations?”, rated from 1 = *Extremely unlikely* to 7 = *Extremely likely*. Higher average scores on this scale indicate greater anticipated achievement-striving.

Perceived Availability. Participants then completed the 2-item anticipated job availability measure (Appendix J; Heilman & Okimoto, 2008). A sample item includes: “If hired for the Head Product Manager position, how likely is it that Sarah would take a lot of sick/personal days?” (reverse-coded), rated from 1 = *Extremely unlikely* to 7 = *Extremely likely*. Higher average scores on this scale indicate higher anticipated availability.

Trait Ratings. Next, participants completed the perceived trait ratings measure (Appendix K), assessed using 17-items, rated from 1 = *Very untrue of Sarah* to 7 = *Very true of Sarah* (Gungor & Biernat, 2008). As discussed in the Results, the trait ratings make up three scales: the warmth scale, the dominance scale, and the dedication scale. Higher average scores on these scales indicate higher warmth, dominance, and dedication perceptions.

Manipulation Check. Participants were then asked to respond to one item to ensure that the parental status manipulation was successful: “Was Sarah described as a parent?”, rated on a dichotomous (*yes/no*) scale.

Demographics Questionnaire. At the end of the survey, participants completed a demographic questionnaire. They were asked to indicate their age, gender identity, and work history.

Results

The second pilot study used a between-subjects design, manipulating the motherhood status of a female applicant. A preliminary analysis showed that participant gender had no significant difference in effect on the outcome variables.

I conducted an exploratory factor analysis using the Principal Axis Factoring (PAF) procedure as a preliminary step for the perceived trait ratings measures. Three scales emerged: 1) the warmth

scale, including items such as “warm”, “helpful”, and “friendly”; 2) the dominance scale, consisting of the items “dominant”, “independent”, and “competitive”; 3) and the dedication scale, including items such as “dedicated”, “productive”, and “hardworking”.

See Table 3 for complete descriptive statistics, the correlations between the outcome variables, and the coefficient alphas for the scales. The mean score for most of the outcome variables was around 5 = *Somewhat likely* (i.e. somewhat likely to be committed, achievement-oriented, warm, and dedicated).

I conducted a series of independent samples t-tests to compare the means between the mother ($n = 42$) and non-mother ($n = 36$) conditions for each of the dependent variables. I first examined promotion recommendation ratings, as this was my primary variable of interest. Results revealed that participants in the mother condition did not demonstrate significant differences in promotion ratings ($M = 5.31$) compared to participants in the non-mother condition ($M = 5.17$), $t(76) = 0.61$, $p = .542$. Thus, Hypothesis 1 was not supported.

Table 3
Descriptive Statistics and Correlation Matrix

	<i>M(SD)</i>	1	2	3	4	5	6	7
1. Promotion	5.24(1.02)	-						
2. Commitment	5.19(0.87)	.46**	(.70)					
3. Achievement	5.12(1.00)	.36**	.49**	(.71)				
4. Availability	4.74(1.45)	.11	.12	.03	(.78)			
5. Warmth	5.47 (0.91)	.33**	.24*	.16	.20	(.93)		
6. Dominance	4.56(1.07)	.04	.20	.23*	.06	.50**	(.80)	
7. Dedication	5.25(0.85)	.30**	.30**	.14	.31**	.72*	.42**	(.89)

Note. All ratings were completed on 7-point scales; coefficient alphas are provided in parentheses on the diagonal.

* $p < .05$ level (2-tailed), ** $p < .01$ level (2-tailed)

Next, I examined my supplementary variables of interest. An independent samples t-test showed that participants anticipated significantly less achievement-striving among mothers ($M = 4.90$) compared to non-mothers ($M = 5.37$), $t(76) = -2.09$, $p < .05$. For commitment ratings, a Levene's test indicated unequal variances ($F = 7.66$, $p = .007$), so I conducted a Welch's t-test, which demonstrated lower anticipated commitment for mothers ($M = 4.93$) compared to non-mothers ($M = 5.49$), $t(63) = -3.11$, $p < .01$. Thus, Hypotheses 2 and 3 were supported.

For the remaining variables, a series of independent samples t-tests revealed no significant differences between conditions; the analyses are summarized in Table 4. Thus, Hypotheses 4 and 5 were not supported. There were also no significant differences in conditions for dominance and dedication ratings.

Table 4
Summary of t-tests

	M_{mother}	$M_{non-mother}$	t	p
Availability ($H4$)	4.52	4.99	$t(76) = -1.42$.161
Warmth ($H5$)	5.51	5.42	$t(76) = 0.45$.656
Dominance	4.42	4.73	$t(76) = -1.28$.205
Dedication	5.19	5.33	$t(76) = -0.71$.479

Pilot Study 2 Discussion

The goals of the second pilot study were to test the saliency of my experimental manipulations for parenthood and to examine the established motherhood penalty for women. First, the results did not support my central expectation that mothers would receive lower promotion ratings compared to non-mothers. Most participants indicated that they were somewhat likely to recommend the candidate for promotion, regardless of parenthood status. This is at odds with previous research, which has consistently displayed a motherhood penalty for promotion (Cuddy et al., 2004; Fuegen et al., 2004; Heilman & Okimoto, 2008). Anticipated job availability and perceived warmth also did not differ for mothers and non-mothers. However, in line with previous research, participants anticipated that mothers were less likely to be committed and less achievement-oriented compared to non-mothers (Fuegen et al., 2004; Heilman & Okimoto, 2008).

There are several key implications of these findings. First, it is possible that the motherhood penalty has improved in recent years, such that mothers no longer face workplace discrimination based on parenthood. However, this is unlikely considering that the gender wage gap still exists and improvements to gender equality may have stalled (e.g. England, 2010; England et al., 2020). Moreover, mothers continue to face a wage penalty when compared to women without children (Jee et al., 2018). Perhaps the motherhood penalty has become more nuanced in its impact, such that employers do not discriminate against mothers when making employment

decisions but instead have reduced expectations for their performance. If that is the case, mothers may face different forms of workplace penalties further down the line.

This pilot study also had a few limitations which may have influenced the results. It is possible that the applicant was viewed as a strong candidate regardless of parenthood due to my within-company promotion scenario. In choosing this design approach, I was able to present participants with more realistic, subtle indicators of parenthood compared to previous studies. However, this may have weakened my construct validity. Notably, 22% of the initial sample did not pass the parental status manipulation check, which suggests the need for a stronger manipulation in the core study. Moreover, the promotion measure simply asked participants to report the likelihood that they would recommend the candidate for promotion. As such, I did not ask participants to make an absolute yes/no decision, which may have yielded stronger effects.

Given that this was a pilot study, I used a small student sample for convenience and cost-effectiveness. The sample was thus comprised of young adults (averaging 19 years of age) with limited experience in recruiting and/or hiring. Student samples are common in research in general and in research on the motherhood penalty specifically (e.g. Aranda & Glick, 2014; Cuddy et al, 2004; Fuegen et al., 2004; Gungor & Biernat, 2008). However, participants were specifically told that this was a pilot study, conducted to test measures that would be used in a subsequent study (Appendix E). These two study features may have contributed to reduced external validity and, in the case of the second feature, impaired participant attentiveness. Nonetheless, my experimental scenario design had strong internal validity. Although a within-subjects design is recommended for scenario designs (Aguinis & Bradley, 2014), I decided to utilize a between-subjects design so that participants did not become aware of the study manipulation. This also allowed me to keep the study short and simple for the purpose of my pilot sample. Overall, findings from this pilot study were useful in informing key decisions for my core study. I will address further implications and future directions in the General Discussion.

Core Study

In Pilot study 2, the results did not support the hypothesized motherhood promotion penalty. However, I used the findings from both of my pilot studies to improve upon the research design

in my core study; changes are detailed in the Method section below. The core study used an intersectional approach to investigate workplace outcomes for Black and White women, as experimental studies on the motherhood penalty have typically focused only on White women. Correlational wage analyses suggest that Black mothers in the United States experience a smaller motherhood wage penalty compared to White mothers (Budig & England, 2001; England et al., 2016; Glauber, 2007; Parrott, 2014; Waldfogel, 1997). Stereotypes of women's family roles may explain this effect. Specifically, mothers who are perceived as breadwinners rather than caregivers do not experience a motherhood penalty in various workplace outcomes (Bear & Glick, 2017), and in contrast to White women, Black women may face different motherhood stereotypes that do not conflict with breadwinning (Blair-Loy & Dehart, 2003; Cuddy & Wolf, 2013; Dow, 2015, 2016a, 2016b; Higginbotham & Weber, 1992). Putting these lines of research together, I expected that Black mothers would be more frequently perceived as breadwinners, mitigating the motherhood penalty they face compared to White women. Based on this proposed model, I tested the following moderated mediation model (see Figure 1):

Hypothesis 1: Motherhood status is negatively related to promotion recommendation.

Hypothesis 2: Race will moderate the relationship between motherhood status and breadwinner perceptions, such that non-mothers are more likely to be perceived as breadwinners compared to mothers, but only when they are White.

Hypothesis 3: Breadwinner perceptions will mediate the relationship between motherhood status and promotion recommendation. Specifically, the mediated effect will be negative for White women and positive for Black women.

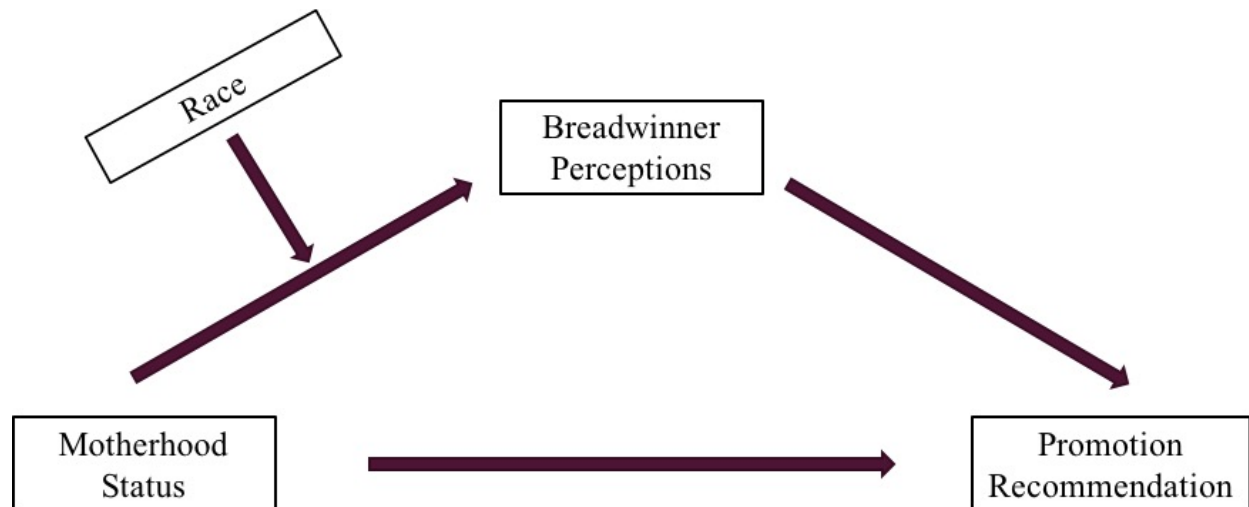


Figure 1. Proposed model.

Moreover, parents are typically viewed as higher in warmth compared to non-parents (Cuddy et al., 2004; Gungor & Biernat, 2008), but lower in anticipated job commitment, achievement-striving, and job availability (Fuegen et al., 2004; Heilman & Okimoto, 2008). However, research has not yet examined the effect of race on these outcomes. In line with my main hypotheses, I anticipated that most of these effects would be specific to White women. As such, I outlined the following supplementary hypotheses:

Hypothesis 4: Race will moderate the relationship between motherhood status and anticipated job commitment, such that mothers receive lower commitment ratings compared to non-mothers, but only when they are White.

Hypothesis 5: Race will moderate the relationship between motherhood status and anticipated achievement-striving, such that mothers receive lower achievement ratings compared to non-mothers, but only when they are White.

Hypothesis 6: Race will moderate the relationship between motherhood status and anticipated job availability, such that mothers receive lower availability ratings compared to non-mothers, but only when they are White.

Hypothesis 7: Mothers will receive higher warmth ratings compared to non-mothers.

Finally, I outlined a set of alternative explanations. Previous research on sole or primary-breadwinners found that married mothers were more likely to be White, whereas single mothers were more likely to be Black or Hispanic (Wang et al., 2013). Yet, perhaps due to the predominant focus on White women in this literature, research on the motherhood penalty typically frames parents as married. Moreover, being a single mother may lead to negative evaluations of Black women (Kennelly, 1999). In order to fully investigate the outcomes of race on the motherhood penalty, I did not specify the candidate's marital status, and thus examined whether single mother perceptions impacted the expected outcomes:

Hypothesis 8: Black mothers will be more highly perceived as single mothers compared to White mothers.

Hypothesis 9: Single mother perceptions are negatively related to promotion recommendation.

Moreover, general racial discrimination may impact the expected findings, as research suggests that Black individuals continue to face hiring discrimination (Bertrand & Mullainathan, 2004; King et al., 2006; Quillian et al., 2017; Stewart & Perlow, 2001). Therefore, I also outlined the following alternate hypothesis:

Hypothesis 10: Black women will receive lower promotion ratings compared to White women.

Method

Participants

I recruited participants using MTurk, a crowdsourcing marketplace that is commonly used for research study recruitment (Buhrmester et al., 2018). MTurk users are remote workers who complete Human Intelligence Tasks (HITs) for compensation. A key advantage to using MTurk is that researchers are able to rapidly collect data from large samples of participants who are more demographically diverse compared to typical undergraduates (Casler et al., 2013). In addition, MTurk provides convenient access to a sample of United States residents that I could not otherwise acquire. As such, MTurk allowed me to collect data from a general sample with

more work experience and a broader age range than can be obtained from an undergraduate sample.

A total of 407 participants were recruited. After removing respondents who failed the parenthood and race manipulation checks, the final sample was made up of 263 participants. This sample was composed of 61% men, 39% women, and approximately 1% ‘agender’ or ‘nonbinary’ individuals (self-described). Respondents self-reported as White (81%), Asian (10%), Black or African American (6%), American Indian or Alaska Native (1%), Native Hawaiian or Other Pacific Islander (less than 1%), or ‘Prefer to self-describe’ (less than 1% reported as ‘European’ and approximately 2% reported as ‘Mixed’ or ‘Multiracial’). They ranged in age from 20 to 70 years old ($M_{Age} = 39.96$, $SD_{Age} = 11.29$) and mostly resided in the United States (less than 1% from Canada). More than half of respondents had no experience in recruiting and/or hiring people (58%) but most were employed in a full-time job at the time of the survey (71%).

Procedure and Study Design

Participants viewed my research study as a HIT titled “Selection Tools”. The HIT was described as a university research study in which researchers had partnered with a management consultancy company to explore how people respond to different types of information, specifically when they are making hiring decisions. The HIT summary further explained that the researchers wanted to figure out what type of personnel information actually best determines hiring decisions. As such, some deception was involved in the study description (see Appendix L for the letter of information and consent and Appendix M for the recruitment script). Participants were invited to participate if they were at least 18 years old and a resident of the United States or Canada. They were told that the study should take approximately 10 to 15 minutes and that they would be compensated \$1.50 USD. If interested, they could self-select into the study by clicking on the survey link, which re-directed them to Qualtrics.

Participants were told to play the role of a Human Resources professional evaluating an internal candidate for a product manager position in the marketing department. The study involved a 2 (target race: Black, White) \times 2 (motherhood status: female parent, female non-parent) randomly assigned, between-subjects design. Thus, each participant evaluated one of four candidates depending on the condition to which they were randomly assigned: a Black mother ($n = 56$), a

Black non-mother ($n = 53$), a White mother ($n = 81$), or a White non-mother ($n = 73$). The smaller number of participants in the Black candidate conditions was due to larger proportion of participants failing the race manipulation check as compared to participants in the White conditions.

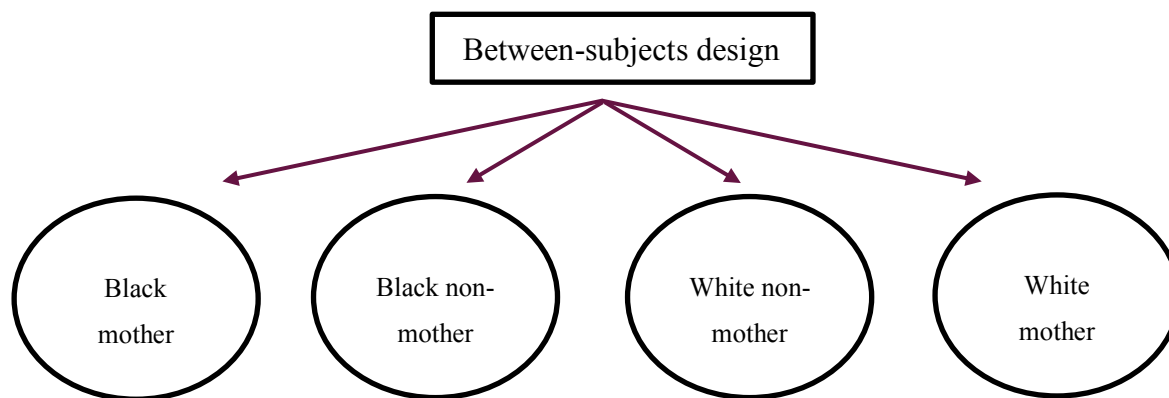


Figure 2. Schematic of the between-subjects study design.

Similar to the procedure in the second pilot study, participants were shown a job description and were then asked to review the candidate's Applicant File (Appendix N), which included her resume, her most recent performance review, her official Human Resources file, and brief interviewer notes from her interview for the Head Product Manager position. Each item was presented on a separate page, in the order described here, and participants were allowed to move back and forth between pages. These materials were identical across the four conditions except with respect to the parent and race manipulations (see below). Once they reviewed the Applicant File, participants answered a series of questions, further described below.

Because the study involved deception, I initially included a debriefing process that briefly explained the true purpose of the study (Appendix O). Participants were able to withdraw their responses at the debriefing stage if they chose to do so, but not once they submitted the survey; they were also informed that withdrawal did not impact their compensation. However, preliminary results showed that 30% of participants requested data withdrawal. Given the nature of my study, these respondents may have demonstrated bias (or assumed that they did) and thus asked to withdraw their data once they received the debriefing. I sought to remove the data withdrawal option for the following reasons: First, participants were informed that they could contact the researchers to discuss the study further if they were uncomfortable with having been

deceived. Second, they were informed that their data is anonymous and that the results would be confidential and published anonymously as group-aggregated data. Finally, if I were to lose data from participants who may be showing bias, this would severely impact my ability to investigate important nuances of the motherhood penalty. I was ultimately advised by Western's Research Ethics Boards (REB) to remove the debriefing process entirely. The REB rationale was that if participants were deceived and not allowed to withdraw their data, it may have done more harm than good to debrief them to the true purpose of the study (see Appendix A for Ethics Amendment Approval and Appendix P for updated letter of information). The final sample did not include any data that used the initial debriefing process.

At the end of the survey, participants received a randomly generated code, which they entered into MTurk in order to receive their compensation.

Materials

Applicant File. I made some changes to the Applicant File based on the results of the second pilot study. Due to the number of respondents who failed the parenthood manipulation check in the pilot study, I changed the manipulations in two ways to be more salient (Appendix N). First, I added an additional line to the resume explaining the candidate's role in the Parent Teacher Association to draw more attention to that point. Second, I updated the structure of the interview notes from sentences to bullet-form to make each information point stand out. The maternity leave manipulation in the Human Resources file was left unchanged.

Moreover, although the second pilot study did not examine race, the proportion of respondents who failed the parenthood manipulation check led to some concern regarding participant attentiveness. Thus, I included a second race manipulation in addition to the use of Black and White names. Specifically, I added a line to the Human Resources file (Appendix N) to indicate whether or not the candidate was a member of a racialized group. In addition, based on the results of the first pilot study, I initially chose the names Jada and Laurie to indicate Black and White names, respectively. However, preliminary results (discussed previously) showed that Jada was perceived as a White name; as such, I ultimately selected the names Taniesha and Debbie for the core study. The final sample did not include any data that used names Jada and Laurie.

I also made some other changes across conditions. Since I did not want to present the candidate as overly favourable, participants read the following prompt before viewing the Applicant File: “One of the applicants, [Taniesha/Debbie], currently works for your company as the Associate Product Manager. You are considering her application, but there are other applicants as well. Note that you will only review [Taniesha/Debbie]'s application, and other survey respondents will review other applications”. In addition, I reminded participants of the specified purpose of the study: “Please remember that we want to figure out what type of personnel information actually determines hiring decisions, so review her application carefully”. By making this change, I hoped to encourage honesty and attentiveness in participants.

Promotion Recommendation. After reviewing the Applicant File, participants completed the promotion recommendation measure (adapted from Heilman & Okimoto, 2008; Appendix Q). It was assessed using a 2-item scale, rated from 1 = *Strongly Disagree* to 7 = *Strongly Agree*: “I think [Taniesha/Debbie] should be considered further for the Head Product Manager position” and “[Taniesha/Debbie] should be eliminated from consideration for the job” (reverse-coded). Higher average scores on this scale indicate higher promotion recommendation.

Perceived Commitment, Achievement, Availability, and Trait Ratings. Participants then completed the additional scales introduced in pilot study 2. These included anticipated job commitment (Appendix H), anticipated achievement-striving (Appendix I), and anticipated job availability (Appendix J), assessed using 2-item or 3-item scales, rated from 1 = *Extremely unlikely* to 7 = *Extremely likely* (Heilman & Okimoto, 2008). Higher average scores on these scales indicate greater anticipated job commitment, achievement-striving, and job availability, respectively. Participants also completed the perceived trait ratings measure (Appendix K), assessed using 17-items, rated from 1 = *Very untrue of [Taniesha/Debbie]* to 7 = *Very true of [Taniesha/Debbie]* (Gungor & Biernat, 2008). As discussed in the Results, the trait ratings make up three scales: warmth scale, the dominance scale, and the dedication scale. Higher average scores on these scales indicate higher warmth, dominance, and dedication perceptions, respectively.

Breadwinner Status. Next, participants rated their perceptions of the candidate as a breadwinner (Appendix R). Breadwinner perceptions were assessed using a single item, rated on

a 1 = *Strongly disagree* to 7 = *Strongly agree* scale: “[Taniesha/Debbie] is the primary breadwinner in her household” (adapted from Bear & Glick, 2017).

Manipulation Checks. Participants were then asked to respond to one item to ensure that the motherhood status manipulation was successful: “Was [Taniesha/Debbie] described as a parent?”, rated on a dichotomous (*yes/no*) scale. They also responded to one item to ensure that the race manipulation was successful: “Please indicate what you think [Taniesha/Debbie]’s primary racial identity is”. Response options included 1 = *White*, 2 = *African-American*, or 3 = *Other (please describe)*.

Single Mother Status. Next, perceptions of the mother as a single parent was assessed using a single item, rated on a 1 = *Strongly disagree* to 7 = *Strongly agree* scale: “[Taniesha/Debbie] is a single mother”. Only participants in the Black or White mother conditions completed this measure (Appendix R).

Social Desirability. Participants then completed a social desirability scale (Reynolds, 1982; Appendix S). Participant social desirability was assessed using 13 items, rated on a dichotomous 1 = *false* and 2 = *true* scale. A sample item includes: “I have never deliberately said something that hurt someone’s feelings”. A higher average score on this scale indicates higher social desirability.

Demographics Questionnaire. At the end of the survey, participants completed a demographic questionnaire. They were asked to indicate their age, race, gender identity, country of residence, and work history.

Results

The core study used a two-way, between-subjects design, manipulating the motherhood status and race of a female promotion candidate. I did not include participant gender or social desirability as controls in the following analyses as preliminary analyses with these variables did not demonstrate significant effects on the outcome variables. See Table 5 for descriptive statistics for the key study variables, correlations between the variables, and coefficient alphas for the scales.

Table 5
Descriptive Statistics and Correlation Matrix

	<i>M(SD)</i>	1	2	3	4	5	6	7	8
1. Promotion	5.39(1.38)	(.71)							
2. Commitment	5.59(1.02)	.59**	(.86)						
3. Achievement	5.67(0.97)	.56**	.70**	(.81)					
4. Availability	5.29(1.55)	.59**	.49**	.36**	(.88)				
5. Warmth	5.54(0.86)	.38**	.50**	.48**	.29**	(.90)			
6. Dominance	4.83(1.21)	.34**	.43**	.42**	.11	.46**	(.73)		
7. Dedication	5.70(0.81)	.60**	.69**	.66**	.51**	.76**	.49**	(.90)	
8. Breadwinner	4.71(1.16)	.16*	.15*	.23**	-0.11	.17**	.21**	.16**	-
9. Single mother	4.55(1.36)	-0.01	0.04	-0.01	-.24**	-0.04	0.15	-0.06	.59**

Note. All ratings were completed on 7-point scales; coefficient alphas are provided in parentheses on the diagonal.

* $p < .05$ level (2-tailed), ** $p < .01$ level (2-tailed)

As in pilot study 2, I conducted an exploratory factor analysis using the Principal Axis Factoring (PAF) procedure as a preliminary step for the perceived trait ratings measures. As expected, three scales emerged: 1) the warmth scale, including items such as “warm”, “helpful”, and “friendly”; 2) the dominance scale, consisting of the items “dominant” and “competitive”; 3) and the dedication scale, including items such as “dedicated”, “productive”, and “hardworking”.

Moderated Mediation Analysis

To evaluate Hypotheses 1-3, I conducted a moderated mediation analysis using Model 7 in Hayes (2018) PROCESS macro. The confidence intervals reported here were computed with a bootstrapped analysis, using 5000 samples with 95% confidence intervals. The model included the candidate’s motherhood status as a categorical predictor (coded 0 = non-mother and 1 = mother), the candidate’s race as a categorical moderator (coded 0 = Black and 1 = White), breadwinner perceptions as a continuous mediator, and promotion recommendation as a continuous outcome. See Table 6 for parameter estimates.

First, motherhood status was significantly negatively related to promotion recommendation ($b = -0.35$, $p < .05$, 95% CI = [-0.68, -0.02]), providing support for Hypothesis 1. Accordingly, mothers were less likely to be recommended for promotion compared to non-mothers. Further, breadwinner perceptions were positively related to promotion recommendation ($b = 0.19$, $p < .05$, 95% CI = [0.04, 0.33]).

Next, I examined whether race moderated the relationship between motherhood status and breadwinner perceptions. The interaction effect was not significant, ($b = -0.22$, $p = .459$, 95% CI = $[-0.79, -0.36]$) and predicted less than 1 percent of the variance in breadwinner perceptions ($\Delta R^2 = .002$). Thus, the data did not provide support for Hypothesis 2. Furthermore, there were no significant main effects of race ($b = 0.22$, $p = .287$, 95% CI = $[-0.19, 0.64]$) or motherhood status ($b = 0.12$, $p = .579$, 95% CI = $[-0.32, 0.56]$) on breadwinner perceptions.

Finally, I examined whether breadwinner perceptions mediated the relationship between motherhood status and promotion recommendation. As this involved a moderated effect, I analyzed the mediated effect for each race condition. As expected, results showed that the mediated effect was positive for Black women ($b = 0.23$, $SE = 0.04$, 95% CI = $[-0.06, 0.12]$) and negative for White women ($b = -0.17$, $SE = 0.04$, 95% CI = $[-0.11, 0.05]$); however, these effects were not significant. As such, Hypothesis 3 was not supported. Overall, the hypothesized moderated mediation model was not supported.

Table 6
Regression Coefficients for the Moderated Mediation Analysis

	DV = Breadwinner				DV = Promotion			
	Coefficient (SE)	<i>t</i>	<i>p</i>	CI	Coefficient (SE)	<i>t</i>	<i>p</i>	CI
Constant	4.58 (.16)	28.74	<.001	4.27, 4.90	4.69(.36)	12.97	<.001	3.98, 5.41
Motherhood	0.12(.22)	0.55	.579	-0.32, 0.56	-0.35(.17)	-2.10	<.05	-0.68, -0.02
Race	0.22(.21)	1.07	.288	-0.19, 0.64				
Breadwinner					0.19(.07)	2.50	<.05	0.04, 0.33
Motherhood*	-0.22(.29)	-0.74	.459	-0.79, 0.36				
Race								
$R^2 = .004$					$R^2 = .041$			
$F(3, 258) = .38$, $p = .768$					$F(2, 259) = 5.55$, $p < .01$			

I had expected that race would impact promotion recommendation through an effect on breadwinner perceptions. As this was not shown to be the case, I also conducted an exploratory two-way analysis of variance (ANOVA), which showed no significant interaction between race and motherhood status on promotion recommendation, $F(1, 258) = 0.37$, $p = .544$, partial $\eta^2 = .001$.

Supplementary Outcomes

Next, I conducted a series of two-way ANOVAs to evaluate Hypotheses 4-7. There was no significant interaction between race and motherhood status on anticipated job commitment, $F(1, 258) = 0.41, p = .521$, partial $\eta^2 = .002$. Thus, Hypothesis 4 was not supported. In addition, there was no significant main effect of race on job commitment, $F(1, 258) = 0.00, p = .978$, partial $\eta^2 = .000$. However, there was a small main effect of motherhood status, such that mothers received lower commitment ratings ($M = 5.44$) compared to non-mothers ($M = 5.75$), $F(1, 258) = 5.68, p < .05$, partial $\eta^2 = .022$.

There was also no significant interaction between race and motherhood status on anticipated achievement-striving, $F(1, 258) = 2.09, p = .150$, partial $\eta^2 = .002$. Thus, Hypothesis 5 was not supported. In addition, there was no significant main effect of race on achievement, $F(1, 258) = 0.03, p = .857$, partial $\eta^2 = .000$, nor of motherhood status on achievement, $F(1, 258) = 0.04, p = .835$, partial $\eta^2 = .000$.

There was a significant interaction between race and motherhood status on anticipated job availability, $F(1, 258) = 5.92, p < .05$, partial $\eta^2 = .022$, with a small effect. Simple main effects analysis showed that, for White women, mothers received significantly lower availability ratings ($M = 4.69$) compared to non-mothers ($M = 5.68$), $p < .001$. In contrast, there were no significant differences in availability ratings between Black mothers ($M = 5.43$) and Black non-mothers ($M = 5.51$), $p = .776$ (see Figure 3). Thus, Hypothesis 6 was supported.

Next, I examined the effect of motherhood status on warmth ratings. I first analyzed the interaction effect and found no significant interaction between race and motherhood status on perceived warmth, $F(1, 257) = 0.00, p = .985$, partial $\eta^2 = .000$. In addition, there was no significant main effect of race on warmth, $F(1, 257) = 1.47, p = .226$, partial $\eta^2 = .006$, nor of motherhood status on warmth, $F(1, 257) = 0.03, p = .960$, partial $\eta^2 = .000$. Thus, Hypothesis 7 was not supported.

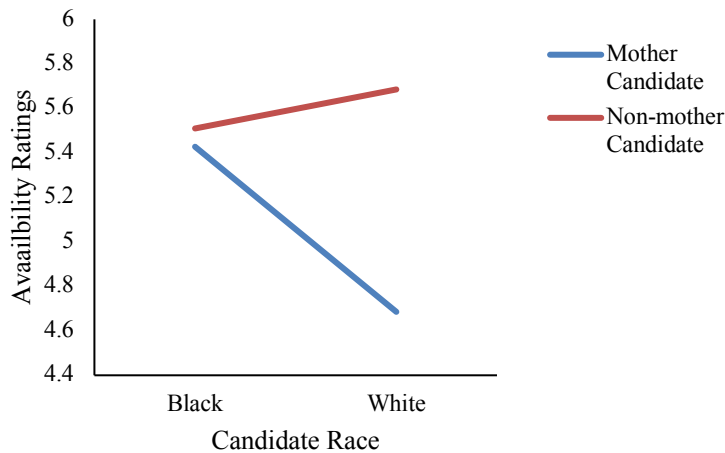


Figure 3. Interaction effect of candidate race and motherhood status on anticipated job availability ratings.

Finally, I examined dominance and dedication ratings. There was no significant interaction between race and motherhood status on perceived dominance, $F(1, 257) = 2.50, p = .115$, partial $\eta^2 = .010$. In addition, there was no main effect of race on dominance, $F(1, 257) = 2.40, p = .122$, partial $\eta^2 = .009$, nor of motherhood status on dominance, $F(1, 257) = 2.03, p = .156$, partial $\eta^2 = .008$. A subsequent analysis showed no significant interaction between race and motherhood status on perceived dedication, $F(1, 257) = 0.00, p = .947$, partial $\eta^2 = .000$. In addition, there was no significant main effect of race on dedication, $F(1, 257) = 0.49, p = .487$, partial $\eta^2 = .002$, nor of motherhood status on dedication, $F(1, 257) = 0.42, p = .516$, partial $\eta^2 = .002$.

Alternate Hypotheses

Lastly, I evaluated my final supplementary hypotheses. An independent samples t-test showed that Black mothers did not receive significantly different single mother ratings ($M = 4.64$) compared to White mothers ($M = 4.49$), $t(253) = 1.66, p = .099$. Thus, Hypothesis 8 was not supported. In addition, although single mother perceptions were negatively related to promotion recommendation, this effect was not significant, $b = -0.01, t = -0.12, p = .872$. Thus, Hypothesis 9 was not supported. Finally, a Welch's t-test showed that Black women did not receive

significantly different promotion ratings ($M = 5.55$) compared to White women ($M = 5.28$), $t(135) = 0.63$, $p = .531$. Thus, Hypothesis 10 was not supported.

Core Study Discussion

The purpose of the core study was to examine breadwinner perceptions and promotion recommendation for Black and White women. Research suggests that breadwinning mothers do not experience a motherhood penalty (Bear & Glick, 2017) and breadwinner perceptions for women may differ based on race (Blair-Loy & Dehart, 2003; Cuddy & Wolf, 2013; Dow, 2015, 2016a, 2016b; Higginbotham & Weber, 1992). As such, I expected that Black mothers would be more frequently perceived as breadwinners, mitigating the motherhood penalty they faced compared to White women. In line with previous research, motherhood status was indeed negatively related to promotion recommendation. However, this relationship was not explained by breadwinner perceptions and there was no difference in effect based on candidate race. Therefore, the data failed to provide support for my hypothesized moderated mediation model.

I also examined the interaction effect between motherhood status and race on a few supplementary outcomes. Consistent with my expectations, I found that anticipated job availability was lower for White mothers compared to White non-mothers but did not differ based on motherhood status for Black women. The data did not support the hypothesized interaction effects for other outcomes. Nonetheless, in line with previous research, anticipated job commitment was lower for mothers compared to non-mothers. Though this study replicates and extends previous research examining these motherhood outcomes, my null findings cast doubt on my results. In particular, unlike past research (Cuddy et al., 2004; Fuegen et al., 2004; Gungor & Biernat, 2008; Heilman & Okimoto, 2008), there were no differences in perceptions of anticipated achievement-striving or warmth based on motherhood.

Given the complex intersections of race and motherhood, I further outlined a set of alternative explanations focused on hiring discrimination and single mother perceptions. Though studies suggest that Black individuals face hiring discrimination (Bertrand & Mullainathan, 2004; King et al., 2006; Stewart & Perlow, 2001), promotion recommendation did not differ based on candidate race in this study. It is important to note that this was not a main hypothesis in my study and that a recent meta-analysis demonstrated the persistence of racial hiring discrimination

in field experiments, even when controlling for key factors related to applicant attributes and occupation (Quillian et al., 2017).

Furthermore, research suggests that being a single mother may lead to negative evaluations of Black women (Kennelly, 1999), and that breadwinning mothers are more likely to be single parents when they are Black women (Wang et al., 2013). However, the data in this study showed that single mother perceptions did not vary based on race, and single mother perceptions were not related to promotion recommendation. Thus, participants did not demonstrate single mother stereotypes of women based on race in this study.

I provide a further examination of these results, my study limitations, and future research directions in the General Discussion.

General Discussion

My findings were consistent with the motherhood penalty established in previous research: compared to non-mothers, participants rated equally qualified mothers as lower in promotion recommendation (core study), anticipated achievement orientation (pilot study 2), and anticipated job commitment (both studies). In order to extend previous research, I also investigated breadwinner perceptions and candidate race in the core study. Contrary to my expectations, breadwinner perceptions did not mediate the relationship between motherhood and promotion. Moreover, candidate race did not impact the results. Notably, there was an interaction between motherhood and candidate race for anticipated job availability, which was lower for mothers compared to non-mothers, but only when the candidate was a White woman. Anticipated job availability did not differ based on motherhood for Black women. As this was a novel finding, it requires replication in future research.

Although there was no interaction between race and motherhood on promotion ratings in my experimental study, correlational wage analyses suggest that Black mothers in the United States experience a smaller motherhood penalty compared to White mothers, even when controlling for key factors such as occupational sector, experience, education, and age (Budig & England, 2001; England et al., 2016; Glauber, 2007; Parrott, 2014; Waldfogel, 1997). Perhaps race and motherhood identities influence workplace outcomes other than promotion, such as salary offers.

It may also be possible that the established wage effect has changed in recent years, such that the motherhood penalty does not differ based on race. Thus, in addition to a more recent wage analysis, future experimental research could examine the interaction effect between race and motherhood on salary offers. Alternatively, the lack of an interaction effect in my core study might have been due to limitations in my research design (e.g. my use of race-stereotypical names and my use of a MTurk participant sample). I address these concerns below.

There was also no interaction between race and motherhood on breadwinner perceptions. Although this was the first study to examine this relationship, the null finding was unexpected based on previous research. For White women, working mothers are typically stereotyped as caregivers rather than breadwinners (Bear & Glick, 2017; Chesley, 2017). This has not been investigated for Black women, but in general, motherhood expectations for Black women do not appear to conflict with breadwinning (Blair-Loy & Dehart, 2003; Dow, 2015, 2016a, 2016b; Higginbotham & Weber, 1992). For instance, Black mothers are judged poorly when they are stay-at-home mothers, whereas White mothers are judged poorly when they work outside of the home (Cuddy & Wolf, 2013). It is possible that motherhood expectations are changing for White women, yet research to date does not support this claim. Although women have made great strides in the public, paid work sector, men's advancement in the private, unpaid domestic sphere has been limited (Daly, 2002; England, 2010; England et al., 2020; Wang et al., 2013). Notably, this gender dynamic is likely racialized. Compared to White women, married Black women may benefit from more household support from husbands (Parrott, 2014) as well as other family or community members (Dow, 2016a, 2016b). It is unclear why the results of this study did not support the expected interaction between race and motherhood on breadwinner perceptions. As mentioned below, sample size and statistical power might be a limitation in my study.

Moreover, breadwinner perceptions did not explain the relationship between motherhood and promotion in my study. Given that breadwinner perceptions are driven by stereotypical motherhood expectations, perhaps these expectations are changing. However, I note above that research does not support this claim. I also previously mentioned that salary offers are an additional outcome variable of interest not included in this study. Specifically, perhaps breadwinner perceptions explain the value that a hiring manager places on a new hire (via salary offers) based on their identity, but the effect is different for promotion offers. Indeed, both

experimental (Bear & Glick, 2017) and correlational research (Manchester et al., 2019) show that breadwinners typically receive a pay premium. I continue my discussion of breadwinner perceptions in the next section.

Limitations

The null findings in the core study may be explained by several key limitations in my research design. I turn first to a discussion of breadwinner perceptions. I found that average breadwinner perceptions were similar across all my study conditions, rated slightly above the scale mid-point. Recall that in order to investigate single mother perceptions, I did not explicitly state whether the candidate was married. In doing so, I may have inadvertently made it difficult for participants to rate breadwinner perceptions. Notably, most studies on the motherhood penalty describe the candidate as married. Perhaps the motherhood penalty is confounded with a ‘marriage penalty’ for women – however, previous research suggests that the motherhood penalty is in fact driven by parenthood and not marriage (Budig & England, 2001). Marital status might nonetheless inform gendered domestic expectations, which, in turn, inform breadwinner perceptions. Given that single mother perceptions did not vary based on race and were not related to promotion recommendation in my core study, future research examining breadwinner perceptions should examine the effect of explicitly framing mothers as married/partnered or single

Turning next to race perceptions, experimental studies using a written scenario design cannot replicate the complex way in which race is automatically salient in the real world. I used race-stereotypical names to represent racial identity in my study and also attempted to select Black and White names that were perceived similarly in terms of SES. Based on a pilot study, I ultimately selected the names Taniesha and Debbie. However, a significant proportion of respondents in the core study failed the race manipulation check for the name Taniesha. Thus, in my final sample, I had an uneven number of participants in my study conditions, which may have limited the statistical power of my analyses.

There are a few possible reasons that participants failed the race manipulation check for the name Taniesha. For instance, Black names are more likely to be correctly identified as Black when the names are associated with a lower SES (Gaddis, 2017). I did not choose names that were perceived as overwhelmingly working class in the pilot study, which may have prevented

some participants in the core study from accurately perceiving Taniesha as a Black name. It is also important to consider the study sample. Participants in my core study were overwhelmingly (81%) White; only 6% were Black or African American. It is possible that these participants were unfamiliar with the name Taniesha, which was selected based on pilot results using a different sample. However, for participants in this condition, the Human Resources file (Appendix N) also indicated that Taniesha was a member of a racialized group. Based on my core study results, participants who failed the race manipulation check for the name Taniesha largely reported that the candidate was White rather than a different race. Scholars have begun to criticize participant inattention and variable data quality from MTurk, which is the platform from which I recruited the participants for my core study (Aruguete et al., 2019; Buhrmester et al., 2018; Chmielewski & Kucker, 2020). Overall, a potentially ineffective race manipulation, lack of participant familiarity with the chosen name, and participant inattention could have each lead to the uneven failures in the race manipulation check. Future research could use a variety of race-stereotypical names in a mixed-factorial design to further investigate the impact of race on the motherhood penalty. This method may increase the likelihood that participants recognize names appropriately. Given that accurate judgement of names is based on SES perceptions, future research could also investigate SES as another independent variable.

My findings were also limited by my scenario design and my use of a general worker sample. In pilot study 2, my results may have been constrained by the use of a small student sample. In the core study, I recruited a larger sample of MTurk workers, who typically have more work experience and a broader age range compared to undergraduate students (Casler et al., 2013). Due to financial constraints, and in order to reach an appropriate sample size, I did not specifically recruit workers with hiring experience, though using undergraduates and general MTurk workers is common in research on the motherhood penalty (Aranda & Glick, 2014; Bear & Glick, 2017; Cuddy et al, 2004; Fuegen et al., 2004; Gungor & Biernat, 2008). Given that my study did not involve actual hiring managers making real hiring decisions, my experimental scenario design had limited ecological validity. I attempted to improve my study realism by providing participants with a reasonable cover story, a carefully designed Applicant File, and realistic indicators of race and parenthood. Of course, this procedure did not completely mimic a real-world hiring scenario. Nonetheless, many of my findings were consistent with previous research on the motherhood penalty. Moreover, my experimental scenario design had strong

internal validity and thus supported a causal negative relationship between motherhood and promotion recommendation.

Future Directions

There are a number of potential avenues for future research, some of which I have already briefly addressed. I offer two key directions for further intersectional research on the motherhood penalty. First, experimental studies show a consistent motherhood penalty for a range of high-status jobs, including manager, vice president, attorney, and consultant. Fewer studies have examined this effect in low-status jobs (e.g. retail work, food service, cleaning, etc). Notably, Black women have historically been segregated into less desirable, lower-paying jobs (see Rosette et al., 2019 for a review). Future research could thus investigate how the intersection of race and occupational status impacts the motherhood penalty.

I also did not examine male candidates in my study so that I could focus my intersectional lens on race and motherhood. Since wage analyses show that Black women experience a smaller motherhood wage penalty compared to White women, it might be assumed that Black men experience a parallel effect. Yet, Black men do not tend to benefit from the fatherhood wage bonus to the extent that White fathers do (Hodges & Budig, 2010). Comparing breadwinner perceptions between women and men would potentially reveal a more nuanced relationship between gender, race, and parenthood.

In addition to these specific research avenues, the recent coronavirus pandemic has resulted in changes to work or even unexpected loss of employment. Many are uncertain of their future in the paid labour force. Others are now engaging in remote work that was perhaps not previously allowed by their employers. The Journal of Applied Psychology has released a call for papers focused on work and employment in the coronavirus pandemic (American Psychological Association, 2020). However, I am particularly interested in the impact of the pandemic on the domestic sphere. Preliminary data shows that loss of employment due to the pandemic is gendered and racialized (Kochhar, 2020). Moreover, men are less likely to manage childcare and housework compared to women (Daly, 2002; England, 2010; England et al., 2020; Wang et al., 2013). Since families have been forced to work from the domestic sphere, the pandemic may

have reinforced these patterns, which may, in turn, influence breadwinner perceptions and the motherhood penalty in the present time and into the future.

Indeed, anecdotal accounts suggest that working mothers are experiencing more conflict between paid work from home and domestic responsibilities compared to working fathers (e.g. Chang et al., 2020; Warwick-Ching, 2020). Parents who have typically relied on extended family members for childcare support have been forced to reconsider their previous arrangements to limit exposure to the coronavirus, especially if they work in frontline industries such as health care, sanitation, or food services, etc (Chang et al., 2020). Although the United States has implemented the Families First Coronavirus Response Act (FFCRA) to protect workers who require family and/or sick leaves due to the coronavirus (U.S. Department of Labor, 2020), not all workers are eligible for this program (Williams, 2020). The FFCRA may also fail to protect workers who are in fact eligible (Williams, 2020). Thus, a closer examination of changes to the private sphere is crucial to understanding workplace outcomes.

Conclusion

In the present research, motherhood status was negatively related to promotion recommendation, providing further support for the established motherhood penalty in the workplace. However, this relationship was not explained by breadwinner perceptions and there was no effect of candidate race. Notably, anticipated job availability differed based on race, such that White mothers were rated lower than White non-mothers, whereas there was no such effect for Black women. This novel finding must be further investigated by future research. Moreover, anticipated job commitment and achievement-striving were lower for all mothers compared to non-mothers. These findings suggest that hiring managers may make assumptions about a woman's potential to succeed in the workplace based on her intersectional identity.

To combat these assumptions, mothers may consider highlighting their work achievements and job commitment when applying for a promotion. In particular, White mothers may consider emphasizing their availability for their job. Yet, I must acknowledge that household and childcare responsibilities may make it difficult for women to advocate for themselves in this way. The domestic “second shift” for women (Hochschild, 2003) impacts their ability to take on lucrative work roles that demand long hours (Cha & Weeden, 2014; Weeden et al., 2016). In one

study of white-collar workers in a demanding consulting role, fathers and non-parents who were experiencing work-life conflict were better able to “pass” as ideal workers compared to mothers (Reid, 2015). As professional jobs become more demanding, which individuals are empowered to persevere in these roles?

In 2013, Sheryl Sandberg published her widely popular book, “Lean In: Women, Work, and the Will to Lead”, to motivate women in pursuing successful careers. Although Sandberg acknowledged existing structural challenges, she largely encouraged women to advocate for themselves. The book garnered some criticism, particularly around concerns that it placed the burden of responsibility on women as individuals. The book may have been empowering for some women, but it ignored the lived experiences of many others, including racialized and/or working-class women. Moreover, some of the claims lacked empirical support, including the message that women tended to disengage from work to focus on their families (see Chrobot-Mason et al. 2019 for a scholarly, evidence-based review). “Leaning in” may not be the ultimate solution, yet, given the lack of structural supports in many workplaces and in government policies, women also do not have many options for achieving optimal work-life balance.

My research adds to an established literature that consistently shows that women face workplace penalties for being mothers, regardless of their qualifications. This motherhood discrimination has important consequences for women’s success in the workplace, including their salary and earnings. When couples with (or without) children make decisions around breadwinning and caregiving, their choices may reflect their chances of success in the workplace, which often depends on their intersectional identities. Thus, although families should be free to choose how they manage their careers and domestic responsibilities, their choices may be constrained by harmful stereotypes that lead to gendered patterns in the workplace and at home. Overall, just as improvements in gender equality have stalled (e.g. England, 2010; England et al., 2020), progress towards dismantling the motherhood penalty will likely be slow.

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Appendix A: Ethics Approvals

Pilot Study 1



Date: 20 December 2019

To: Dr. Johanna Weststar

Project ID: 114847

Study Title: Race and Class Perceptions of Names

Short Title: Name Perceptions

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: January 10 2020

Date Approval Issued: 20/Dec/2019

REB Approval Expiry Date: 20/Dec/2020

Dear Dr. Johanna Weststar

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Email Script Invitation Letter	Recruitment Materials	11/Dec/2019	1
LETTER OF INFORMATION AND CONSENT	Implied Consent/Assent	20/Dec/2019	2
Name Perceptions_Qualtrics Survey	Online Survey	11/Dec/2019	1

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Kelly Patterson, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Pilot Study 2



Date: 20 December 2019

To: Dr. Johanna Weststar

Project ID: 115065

Study Title: Hiring Decisions: Applicant File Pilot

Short Title: Hiring Decisions

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: January 10 2020

Date Approval Issued: 20/Dec/2019

REB Approval Expiry Date: 20/Dec/2020

Dear Dr. Johanna Weststar

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
LETTER OF INFORMATION AND CONSENT	Implied Consent/Assent	20/Dec/2019	2
Qualtrics survey	Online Survey	11/Dec/2019	1
Recruitment Script	Recruitment Materials	11/Dec/2019	1

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

, Research Ethics Officer on behalf of Dr. Riley Hinson, NMREB Vice-Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Core Study



Date: 6 April 2020

To: Dr. Johanna Weststar

Project ID: 114848

Study Title: The Motherhood Penalty: Not so Black and White

Short Title: Selection Tools

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: May 1 2020

Date Approval Issued: 06/Apr/2020

REB Approval Expiry Date: 06/Apr/2021

Dear Dr. Johanna Weststar

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Amazon Mechanical Turk Recruitment Information	Recruitment Materials	06/Mar/2020	1
DEBRIEFING FORM_Clean	Debriefing Letter	25/Mar/2020	1
LETTER OF INFORMATION AND CONSENT	Implied Consent/Assent	06/Mar/2020	1
Selection Tools Qualtrics Survey_March 6th	Online Survey	06/Mar/2020	1

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Kelly Patterson, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Core Study Amendment



Date: 30 April 2020

To: Dr. Johanna Weststar

Project ID: 114848

Study Title: The Motherhood Penalty: Not so Black and White

Application Type: NMREB Amendment Form

Review Type: Delegated

Full Board Reporting Date: June 5 2020

Date Approval Issued: 30/Apr/2020

REB Approval Expiry Date: 06/Apr/2021

Dear Dr. Johanna Weststar,

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the amendment, as of the date noted above.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
LETTER OF INFORMATION AND CONSENT_clean	Implied Consent/Assent	20/Apr/2020	1

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Kelly Patterson, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix B: Pilot Study 1 Letter of Information and Consent

Title: Name Perceptions

Dr. Johanna Weststar (Principal Investigator)

Associate Professor, DAN Department of Management and Organizational Studies

Western University

Office: [REDACTED] Email: [REDACTED]

Phone: [REDACTED]

Shruti Kumar (Student Researcher)

MSc Graduate Student, Industrial/Organizational Psychology

Western University

Email: [REDACTED]

Hello Survey Participant:

Invitation to participate and rationale for the survey

We would like to invite you to participate in a research study that explores people's race and class perceptions of different names. We will use these race and class perceptions to determine which names to use in a subsequent study. This survey will take about five minutes to complete, and all responses are anonymous.

Procedures

If you agree to participate, you will take an online survey where you will be asked to review 16 names and answer two questions for each name (the pair of questions is identical across names).

Benefits, Risks and Harms of Participating

There are no known or anticipated risks or discomforts associated with participating in this survey. You may not directly benefit from participating in this survey, but information gathered may provide benefits to society as a whole, including a greater understanding of how different names are perceived.

Compensation

You will not receive any compensation for your participation in this study.

Your Ability to Leave and Confidentiality

Your participation is completely voluntary, and you may choose to end the survey at any time. Participant responses will be anonymous and will not be linked to any identifying information. As such, it is not possible for participants to withdraw their data once they have started the study.

Your survey responses will be collected anonymously through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then be exported from Qualtrics and securely stored on Western University's server for a minimum of

7 years. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your survey-related records to monitor the conduct of the research. All data will be collected anonymously and neither the researchers nor anyone else will be able to identify you as a research participant.

Your Rights as a Participant

Your participation in this survey is voluntary. You may decide not to be in this survey. Even if you consent to participate, you have the right to not answer individual questions or to withdraw from the survey at any time. You do not waive any legal right by consenting to this survey. If you have questions about this research survey please contact: Shruti Kumar (Researcher; [REDACTED]) or Johanna Weststar (Principal Investigator; [REDACTED]). If you have any questions about your rights as a research participant or the conduct of this survey, you may contact The Office of Human Research Ethics (519) 661-3036, 1-844- 720-9816, email: ethics@uwo.ca. This office oversees the ethical conduct of research studies and is not part of the research team. Everything that you discuss will be kept confidential.

You indicate your voluntary agreement to participate by clicking the link below and proceeding to the survey.

This letter is yours to keep for future reference.

Appendix C: Pilot Study 1 Email Recruitment Script

Hello everyone,

I am looking for volunteers to review a list of 16 names in an online survey. The survey will ask you to read a name and then answer two questions regarding race and class perceptions for each name. This will take only a couple of minutes to complete, and all responses are anonymous. If you would like to complete the survey, you can access it here:

https://westernsocialscience.eu.qualtrics.com/jfe/form/SV_3C2NFUuMMH1YInv. The survey will be available until January 30th. I appreciate all the help I can get! Please let me know if you have any questions.

Thank you,
Shruti

Appendix D: Pilot Study 2 Letter of Information and Consent

Title: Hiring Decisions

Dr. Johanna Weststar (Principal Investigator)
Associate Professor, DAN Department of Management and Organizational Studies
Western University
Office: [REDACTED] Email: [REDACTED]
Phone: [REDACTED]

Shruti Kumar (Student Researcher)
MSc Graduate Student, Industrial/Organizational Psychology
Western University
Email: [REDACTED]

Hello DAN Management Research Participant:

Invitation to participate and rationale for the study

We would like to invite you to participate in a pilot study to test measures that will be used in a subsequent study. In this study, you will be asked to answer a series of questions regarding your perception of a job applicant. The study should take approximately 15 minutes to complete.

Procedures

If you agree to participate, you will take an online study where you will be asked to review a job applicant's file. You will then answer a series of questions regarding your perception of the applicant and provide some personal demographic information.

Benefits, Risks and Harms of Participating

There are no known or anticipated risks or discomforts associated with participating in this study. You may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole, including a greater understanding of how hiring decisions are made.

Compensation

You will be compensated with 0.5 research credits for your participation in this study.

Your Ability to Leave and Confidentiality

You may choose to end the study at any time, your participation is completely voluntary. Participant responses will be anonymous and will not be linked to any identifying information. As such, it is not possible for participants to withdraw their data once they have started the study.

Your study responses will be collected anonymously through a secure online study platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then

be exported from Qualtrics and securely stored on Western University's server for a minimum of 7 years. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. All data will be collected anonymously and neither the researchers nor anyone else will be able to identify you as a research participant.

Your Rights as a Participant

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to answer the survey questions it will have no effect on your research credit. You do not waive any legal right by consenting to this study.

If you have questions about this research study please contact: Shruti Kumar (Researcher; [REDACTED]) or Johanna Weststar (Principal Investigator; [REDACTED]).

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, 1-844-720-9816, email: ethics@uwo.ca. This office oversees the ethical conduct of research studies and is not part of the study team. Everything that you discuss will be kept confidential.

You indicate your voluntary agreement to participate by clicking the link below and proceeding to the survey.

This letter is yours to keep for future reference.

Appendix E: Pilot Study 2 Recruitment Script

We are recruiting participants for a pilot study to test measures that will be used in a subsequent study. In this study, you will be asked to review a job applicant's file and answer a series of questions regarding your perception of the applicant. In addition to this, you will be asked to provide some demographic information about yourself.

This survey should take approximately 15 minutes and you will be compensated with 0.5 course credits. If interested, please follow this link:

https://westernsocialscience.eu.qualtrics.com/jfe/form/SV_2ccYXQsf17sJ3r7.

Please note: Your participation in this survey is voluntary, and your responses are completely confidential and anonymous. If you have any questions or concerns, please contact Shruti Kumar (graduate student), at [REDACTED].

Appendix F: Pilot Study 2 Applicant File

Imagine that you are a Human Resources professional at Company ABC, and you are hiring for a Head Product Manager. One of the applicants, Sarah Johnson, currently works for your company as the Associate Product Manager. You are considering her application, as well as a few other, similarly qualified applicants. Please see below for a brief job description.

Job Description: The Head Product Manager will coordinate marketing policies, monitor trends for product demand, oversee product development, and identify potential customers. The Head Product Manager will also develop pricing strategies that maximize company profits and ensure customer satisfaction.

Next, please review Sarah's Applicant File, which includes a resume, Human Resources notes, performance review notes, and brief interview notes. Once you have reviewed this information, you will be asked to indicate the degree to which you would recommend that Sarah be hired for this position, as well as a few follow-up questions.

Resume

Sarah Johnson
720 Arbor Street, Ann Arbor, MI, USA
sarah.johnson@companyABC.com

Education

Bachelor of Business Administration
Ross School of Business, University of Michigan

Degree Conferred 2010

Relevant Experience

- Associate Product Manager at Company ABC, 2015–present
 - Responsibilities: Expanding product solutions and offerings, managing product life cycle from strategic planning to tactical activities, and preparing and adhering to budgets.
 - Marketing Assistant at Company DEF, 2009–2015
 - Responsibilities: Created databases using Microsoft Access, organized and edited presentations, and developed initial strategies for marketing campaigns.
 - Intern at Company DEF, 2008-2009
 - Responsibilities: Assisted with various company campaigns and coordinated social media.
 - Administrative Assistant at Company XYZ, 2005-2006
 - Responsibilities: Various clerical and administrative duties, such as scheduling appointments and organizing files.
-

Volunteer Work

- [Parent Teacher Association, 2015–present/Animal Shelter volunteer, 2015–present]

Performance Review

2019 PERFORMANCE REVIEW			
EMPLOYEE INFO			
Employee Name:	Sarah Johnson	Department:	Marketing
Completed by:	Current Supervisor	Date of Review:	August 2019
Overall Performance 78%		Areas to improve 71%	
<ul style="list-style-type: none"> Sarah demonstrates expected performance on key behaviors for her role. She possesses standard job knowledge, meets most of her yearly goals, and typically receives satisfactory performance feedback from her clients. Her attendance record is within an acceptable range and there are no major concerns based on her employment history and HR file. 		<ul style="list-style-type: none"> Of the areas identified in previous performance reviews, Sarah has demonstrated satisfactory growth as an employee. Areas for further improvement: Time management Areas for potential improvement: There are not many opportunities for initiative-taking in her current role, so her leadership capabilities cannot be evaluated at this time. 	
Additional Comments:			
<ul style="list-style-type: none"> Overall, Sarah's performance in her current role as Associate Product Manager has been satisfactory. She typically meets her project goals while staying within budget and is a team player. She used to have trouble with time management and sometimes still gets bogged down in the details. The Head Product Manager Position might be just what she needs for her professional development. 			

Human Resources Official File

- Name: Sarah Johnson
- Reference check: Complete
- Education and employment history: Verified
- Mandatory safety training: Complete
- Current role: Associate Product Manager
- Approved leaves of absences: Yes – [Jury duty in 2016 / Maternity leave taken in 2016]
- Unapproved leaves of absences: None
- Attendance record: Satisfactory
- Disciplinary action: None
- Other notes: Applying for Head Product Manager – decision pending

Brief Interview Notes

Why are you applying for this position? I am looking for more challenging work. I think I have proven myself in the associate role and can take on more responsibilities, especially since the position is available.

What is your greatest strength? Provide an example of how you applied this strength in your current role. I would say my greatest strength has to be my interpersonal skills. I get along really well with people and find it easy to guide and encourage others. On the last team project, we dealt with a major competition from a competitor, but I helped motivate everyone and we ended up out-performing the competitor.

What is your greatest weakness? There are so many moving parts in my current role and it can be hard to meet my deadlines because I want to give 100% to everything. [When my first daughter was born, I did struggle with managing my multiple commitments, but now that my children are older, I can focus back on my career/When I was first hired into the company, I used to struggle with managing multiple commitments]. I've definitely gotten better at time management over the years, and I know I can meet the challenge of the Head Product Manager role.

Appendix G: 1-item Promotion Scale

Promotion Recommendation Measure (adapted from Cuddy et al., 2004; Fuegen et al., 2004). 1 item measured on a 7-point Likert scale from 1 = *Extremely unlikely* to 7 = *Extremely likely*.

1. How likely are you to recommend Sarah for promotion?

Appendix H: Commitment Scale

Anticipated Job Commitment Measure (Heilman & Okimoto, 2008). 3 items measured on a 7-point Likert scale from 1 = *Extremely unlikely* to 7 = *Extremely likely*.

1. If hired for the Head Product Manager position, how likely is it that Sarah would be very committed to the company?
2. If hired for the Head Product Manager position, how likely is it that Sarah would be willing to make sacrifices for the job?
3. If hired for the Head Product Manager position, how likely is it that Sarah would make work a top priority?

Appendix I: Achievement Scale

Anticipated Achievement-Striving Measure (Heilman & Okimoto, 2008). 3 items measured on a 7-point Likert scale from 1 = *Extremely unlikely* to 7 = *Extremely likely*.

1. If hired for the Head Product Manager position, how likely is it that Sarah would be eager to get ahead?
2. If hired for the Head Product Manager position, how likely is it that Sarah would apply for further promotions in the future?
3. If hired for the Head Product Manager position, how likely is it that Sarah would have high career aspirations?

Appendix J: Availability Scale

Anticipated Job Availability Measure (Heilman & Okimoto, 2008). 3 items measured on a 7-point Likert scale from 1 = *Extremely unlikely* to 7 = *Extremely likely*.

1. If hired for the Head Product Manager position, how likely is it that Sarah would take a lot of sick/personal days? (reverse-coded)
2. If hired for the Head Product Manager position, how likely is it that Sarah would arrive late for work or leave work early? (reverse-coded)

Appendix K: Traits Scale

Perceived Trait Ratings Measure (Gungor & Biernat, 2008). 17 items measured on a 7-point Likert scale from 1 = *Very untrue of Sarah* to 7 = *Very true of Sarah*.

1. Productive
2. Helpful
3. Intelligent
4. Dedicated
5. Warm
6. Trustworthy
7. Responsible
8. Hard-working
9. Likeable
10. Kind
11. Dominant
12. Independent
13. Understanding
14. Aware of others' feelings
15. Competitive
16. Self-confident
17. Friendly

Appendix L: Core Study Letter of Information and Consent

Title: Selection Tools

Dr. Johanna Weststar (Principal Investigator)
Associate Professor, DAN Department of Management and Organizational Studies
Western University
Office: [REDACTED] Email: [REDACTED]
Phone: [REDACTED]

Shruti Kumar (Student Researcher)
MSc Graduate Student, Industrial/Organizational Psychology
Western University
Email: [REDACTED]

Hello Amazon Mechanical Turk Participant:

Invitation to participate and rationale for the survey

We would like to invite you to participate in a survey that explores how people respond to different types of information, specifically when they are making hiring decisions. We want to figure out what type of personnel information actually determines hiring decisions. In this survey, you will be asked to answer a series of questions regarding your perception of a job applicant. The survey should take approximately 10-15 minutes to complete. To participate in this survey, you must be at least 18 years old and live in the United States or Canada.

Procedures

If you agree to participate, you will take an online survey where you will be asked to review a job applicant's file. You will then answer a series of questions regarding your perception of the applicant and provide some personal demographic information. At the end of the survey, you will be given a randomly generated code. You will be asked to input this code in our survey's corresponding Mechanical Turk interface for compensation approval.

Confidentiality

Your survey responses will be collected anonymously through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then be exported from Qualtrics and securely stored on Western University's server for a minimum of 7 years. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. All data will be collected anonymously and neither the researchers nor anyone else will be able to identify you as a research participant.

Voluntary Participation

Participation in this study is strictly voluntary and therefore you may discontinue participation at any time or refuse to answer any questions that make you feel uncomfortable. You will be able to

withdraw your responses at the debriefing stage. However, once you have submitted your survey responses, you cannot withdraw your participation in the study because your responses are anonymous, and it is not possible to locate them in the final dataset. You do not waive any legal rights by consenting to this study.

Compensation

You will be compensated \$1.50 USD for your participation in this survey. There is no penalty for withdrawing from the survey. However, you must click through to the end of the survey in order to receive compensation. You will receive your compensation through Amazon Mechanical Turk's interface. To receive compensation, you must enter the random code given at the end of the Qualtrics survey into Amazon Mechanical Turk. Once this code is provided, the researchers can approve your compensation. While the researchers will try to approve your compensation as quickly as possible, please allow up to 2 weeks for compensation approval.

Benefits, Risks and Harms of Participating

There are no known or anticipated risks or discomforts associated with participating in this survey. You may not directly benefit from participating in this survey, but information gathered may provide benefits to society as a whole, including a greater understanding of how hiring decisions are made.

Debriefing and Additional Information

You will receive additional information concerning the purposes of the study at the end of the study and will be provided with the researcher's contact information should you have additional questions.

If you have questions about this research survey please contact: Shruti Kumar (Student Researcher; [REDACTED]) or Johanna Weststar (Principal Investigator; [REDACTED]).

If you have any questions about your rights as a research participant or the conduct of this survey, you may contact The Office of Human Research Ethics (519) 661-3036, 1-844- 720-9816, email: ethics@uwo.ca. This office oversees the ethical conduct of research studies and is not part of the research team. Everything that you discuss will be kept confidential.

By clicking the link below and proceeding to the survey, you are providing implied consent to participate.

This letter is yours to keep for future reference.

Appendix M: Core Study Recruitment Script

We are researchers at Western University, Canada. We have partnered with a new management consultancy company to better understand how people respond to different types of information. In particular, we are hoping to gain some insight on the effectiveness of hiring tools. There is a lot of controversy around these tools, and we want to figure out what type of personnel information actually determines hiring decisions. In this survey, you will be asked to review a job applicant's file and answer a series of questions regarding your perception of the applicant. In addition to this, you will be asked to provide some demographic information about yourself.

This survey should take approximately 10-15 minutes, and you will be compensated with \$1.5 USD. We invite you to participate in this survey if you are at least 18 years old and live in the United States or Canada. If interested, please follow the link below.

Please note: Your participation in this survey is voluntary, and your responses are completely confidential and anonymous. If you have any questions or concerns, please contact Shruti Kumar (graduate student), at [REDACTED].

Survey: https://westernsocialscience.eu.qualtrics.com/jfe/form/SV_1MJl37p9PjeRnTv

Appendix N: Core Study Applicant File

Imagine that you are a Human Resources professional at Company ABC, and you are hiring for a Head Product Manager. One of the applicants, [Taniesha/Debbie], currently works for your company as the Associate Product Manager. You are considering her application, but there are other applicants as well. Note that you will only review [Taniesha/Debbie]'s application, and other survey respondents will review other applications. See below for a brief job description.

Job Description: The Head Product Manager will coordinate marketing policies, monitor trends for product demand, oversee product development, and identify potential customers. The Head Product Manager will also develop pricing strategies that maximize company profits and ensure customer satisfaction.

Next, please review [Taniesha/Debbie]'s Applicant File, which includes a resume, Human Resources file, performance review notes, and brief interview notes. Once you have reviewed this information, you will be asked whether Taniesha should be hired for this position, as well as a few follow-up questions. Please remember that we want to figure out what type of personnel information actually determines hiring decisions, so review her application carefully.

Resume

[Taniesha/Debbie] M.
720 Arbor Street, Ann Arbor, MI, USA
[\[taniesha/debbie\].m@companyABC.com](mailto:[taniesha/debbie].m@companyABC.com)

Education

Bachelor of Business Administration
Ross School of Business, University of Michigan

Degree Conferred 2010

Relevant Experience

- Associate Product Manager at Company ABC, 2015–present
 - Responsibilities: Expanding product solutions and offerings, managing product life cycle from strategic planning to tactical activities, and preparing and adhering to budgets.
 - Marketing Assistant at Company DEF, 2010–2015
 - Responsibilities: Created databases using Microsoft Access, organized and edited presentations, and developed initial strategies for marketing campaigns.
 - Intern at Company DEF, 2008-2009
 - Responsibilities: Assisted with various company campaigns and coordinated social media.
 - Administrative Assistant at Company XYZ, 2005-2006
 - Responsibilities: Various clerical and administrative duties, such as scheduling appointments and organizing files.
-

Volunteer Work

- [Parent Teacher Association/Animal Shelter volunteer], 2015-present
 - [I volunteer at my child's school/I volunteer at a local animal shelter].

Performance Review

PERFORMANCE REVIEW			
EMPLOYEE INFO			
Employee Name:	[Taniesha/Debbie] M.	Department:	Marketing
Completed by:	Current Supervisor		
Overall Performance 78%		Areas to improve 71%	
<ul style="list-style-type: none"> • [Taniesha/Debbie] demonstrates expected performance on key behaviors for her role. • She possesses standard job knowledge, meets most of her yearly goals, and typically receives satisfactory performance feedback from her clients. • Her attendance record is within an acceptable range and there are no major concerns based on her employment history and HR file. 		<ul style="list-style-type: none"> • Of the areas identified in previous performance reviews, [Taniesha/Debbie] has demonstrated satisfactory growth as an employee. • Areas for further improvement: Time management • Areas for potential improvement: There are not many opportunities for initiative-taking in her current role, so her leadership capabilities cannot be evaluated at this time. 	
Additional Comments:			
<ul style="list-style-type: none"> • Overall, [Taniesha/Debbie]'s performance in her current role as Associate Product Manager has been satisfactory. She typically meets her project goals while staying within budget and is a team player. She used to have trouble with time management and sometimes still gets bogged down in the details. The Head Product Manager Position might be just what she needs for her professional development. 			

Human Resources Official File

- Name: [Taniesha/Debbie]
- Member of a racialized group: [Yes/No]
- Reference check: Complete
- Education and employment history: Verified
- Mandatory safety training: Complete
- Current role: Associate Product Manager
- Approved leaves of absences: Yes – [Jury duty in 2016 / Maternity leave taken in 2016]
- Unapproved leaves of absences: None
- Attendance record: Satisfactory
- Disciplinary action: None
- Other notes: Applying for Head Product Manager – decision pending

Brief Interview Notes

Why are you applying for this position?

- Looking for more challenging work
- Proven ability in the associate role and can take on more responsibilities

What is your greatest strength? Provide an example of how you applied this strength in your current role.

- Interpersonal skills
- Motivated others in order to out-perform major competitor in previous team project

What is your greatest weakness?

- Want to give 100% to everything but many moving parts in the current role
- Can be hard to meet deadlines
- Struggled with managing multiple commitments [when first daughter was born/when first hired]
- Improved time management and can meet the challenges of the Head Product Manager role

Appendix O: Core Study Debriefing Form
(Removed for final sample)

Title of Project: Selection Tools

Dr. Johanna Weststar (Principal Investigator)

Associate Professor, DAN Department of Management and Organizational Studies
Western University

Office: [REDACTED] Email: [REDACTED]

Phone: [REDACTED]

Shruti Kumar (Student Researcher)

MSc Graduate Student, Industrial/Organizational Psychology
Western University

Email: [REDACTED]

Thank you for your participation in this study! The purpose of this study was to investigate perceptions of mothers in the workplace. Specifically, we are examining how parenthood and racial identity are related to various workplace outcomes. Previous research demonstrates that mothers tend to be rated poorly compared to fathers or individuals without children on workplace outcomes such as hiring recommendation. This is described as a motherhood penalty. However, this penalty does not occur when mothers are perceived as breadwinners. We wondered whether racial identity could influence these results. We predicted that African-American mothers are more likely to be perceived as breadwinners compared to White mothers, and that this mitigates the motherhood penalty they face compared to White mothers.

Before starting this survey, you were informed that we were partnered with a management consultancy company to explore what type of personnel information best determines hiring decisions. As such, deception was used in this study. The true purpose of this study was to determine 1) whether breadwinner perceptions of mothers differ based on race and 2) how parenthood, race, and breadwinner perceptions are related to workplace outcomes. In order to avoid impression management and capture biases during the rating process, we withheld this information until the current debriefing. We did not partner with a management consultancy company. If you are uncomfortable with having been deceived, you may contact the researchers to discuss the study further.

If, after reading the true purpose of the study, you wish to withdraw your data, please check the box below and click submit. This does not impact your compensation. Leaving the box unchecked and clicking submit will imply consent.

Your data is anonymous, and we cannot link your responses to your identity in any way. Furthermore, the results are confidential to the experimenters and all results will be published anonymously as group-aggregated data.

If you have any questions or concerns, please contact Shruti Kumar.

Here are some references if you would like to read more:

- Aranda, B., & Glick, P. (2014). Signaling devotion to work over family undermines the motherhood penalty. *Group Processes & Intergroup Relations*, 17, 91-99.
- Bear, J. B., & Glick, P. (2017). Breadwinner bonus and caregiver penalty in workplace rewards for men and women. *Social Psychological and Personality Science*, 8, 780-788.
- Fuegen, K., Biernat, M., Haines, E., & Deaux, K. (2004). How gender and parental status influence judgments of job-related competence. *Journal of Social Issues*, 60, 737-754.
- Heilman, M. E., & Okimoto, T. G. (2008). Motherhood: A potential source of bias in employment decisions. *Journal of Applied Psychology*, 93, 189.

If you would like to receive a copy of the final results of this study, please contact Shruti Kumar.

Thank you,

Shruti Kumar
Western Psychology Graduate Student

If you wish to withdraw your data, please check the box below and click submit. This does not impact your compensation. Leaving the box unchecked and clicking submit will imply consent.

☐ I do not consent to include my data in the dataset. Please withdraw my data.

Appendix P: Core Study Updated Letter of Information and Consent

Title: Selection Tools

Dr. Johanna Weststar (Principal Investigator)

Associate Professor, DAN Department of Management and Organizational Studies

Western University

Office: [REDACTED] Email: [REDACTED]

Phone: [REDACTED]

Shruti Kumar (Student Researcher)

MSc Graduate Student, Industrial/Organizational Psychology

Western University

Email: [REDACTED]

Hello Amazon Mechanical Turk Participant:

Invitation to participate and rationale for the survey

We would like to invite you to participate in a survey that explores how people respond to different types of information, specifically when they are making hiring decisions. We want to figure out what type of personnel information actually determines hiring decisions. In this survey, you will be asked to answer a series of questions regarding your perception of a job applicant. The survey should take approximately 10-15 minutes to complete. To participate in this survey, you must be at least 18 years old and live in the United States or Canada.

Procedures

If you agree to participate, you will take an online survey where you will be asked to review a job applicant's file. You will then answer a series of questions regarding your perception of the applicant and provide some personal demographic information. At the end of the survey, you will be given a randomly generated code. You will be asked to input this code in our survey's corresponding Mechanical Turk interface for compensation approval.

Confidentiality

Your survey responses will be collected anonymously through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union safe harbour framework. The data will then be exported from Qualtrics and securely stored on Western University's server for a minimum of 7 years. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. All data will be collected anonymously and neither the researchers nor anyone else will be able to identify you as a research participant.

Voluntary Participation

Participation in this study is strictly voluntary and therefore you may discontinue participation at any time or refuse to answer any questions that make you feel uncomfortable. Once you have

submitted your survey responses, you cannot withdraw your participation in the study because your responses are anonymous, and it is not possible to locate them in the final dataset. You do not waive any legal rights by consenting to this study.

Compensation

You will be compensated \$1.50 USD for your participation in this survey. There is no penalty for withdrawing from the survey. However, you must click through to the end of the survey in order to receive compensation. You will receive your compensation through Amazon Mechanical Turk's interface. To receive compensation, you must enter the random code given at the end of the Qualtrics survey into Amazon Mechanical Turk. Once this code is provided, the researchers can approve your compensation. While the researchers will try to approve your compensation as quickly as possible, please allow up to 2 weeks for compensation approval.

Benefits, Risks and Harms of Participating

There are no known or anticipated risks or discomforts associated with participating in this survey. You may not directly benefit from participating in this survey, but information gathered may provide benefits to society as a whole, including a greater understanding of how hiring decisions are made.

Additional Information

If you have questions about this research survey please contact: Shruti Kumar (Student Researcher; [REDACTED]) or Johanna Weststar (Principal Investigator; [REDACTED]).

If you have any questions about your rights as a research participant or the conduct of this survey, you may contact The Office of Human Research Ethics (519) 661-3036, 1-844- 720-9816, email: ethics@uwo.ca. This office oversees the ethical conduct of research studies and is not part of the research team. Everything that you discuss will be kept confidential.

By clicking the link below and proceeding to the survey, you are providing implied consent to participate.

This letter is yours to keep for future reference.

Appendix Q: 2-item Promotion Scale

Screening Recommendation Measure (adapted from Heilman & Okimoto, 2008). 2 items measured on a 7-point Likert scale from 1 = *Strongly Disagree* to 7 = *Strongly Agree*.

1. I think [Taniesha/Debbie] should be considered further for the Head Product Manager position.
2. [Taniesha/Debbie] should be eliminated from consideration for the job (reverse-coded).

Appendix R: Breadwinner and Single Mother Perceptions

Both items were measured on a 7-point Likert scale from 1 = *Strongly Disagree* to 7 = *Strongly Agree*.

1. [Taniesha/Debbie] is the primary breadwinner in her household.
2. [Taniesha/Debbie] is a single mother

Appendix S: Social Desirability Scale

13 items answered on a true (1) or false (2) scale (Reynolds, 1982).

3. It is sometimes hard for me to go on with my work if I am not encouraged.
4. I sometimes feel resentful when I don't get my way.
5. On a few occasions, I have given up doing something because I thought too little of my ability.
6. There have been times when I felt like rebelling against people in authority even though I knew they were right.
7. No matter who I'm talking to, I'm always a good listener (reverse-coded).
8. There have been occasions when I took advantage of someone.
9. I'm always willing to admit when I make a mistake (reverse-coded).
10. I sometimes try to get even rather than forgive and forget.
11. I am always courteous, even to people who are disagreeable (reverse-coded).
12. I have never been irked when people expressed ideas very different from my own (reverse-coded).
13. There have been times when I was quite jealous of the good fortune of others.
14. I am sometimes irritated by people who ask favours of me.
15. I have never deliberately said something that hurt someone's feelings (reverse-coded).

Curriculum Vitae

Shruti Kumar

MSc. Candidate
Department of Psychology
University of Western Ontario
London, ON

EDUCATION

University of Western Ontario M.Sc. Industrial/Organizational Psychology	In Progress
University of Toronto Honours B.Sc. Neuroscience and Psychology	Degree Conferred 2018

AWARDS

University of Western Ontario Graduate Research Fund	2019 – 2020
University of Toronto Excellence Awards in Social Sciences and Humanities	2017
University of Toronto Entrance Scholarship	2013

CONFERENCE PRESENTATIONS

Kumar, S. & Weststar, J. (2020, May). *The Motherhood Penalty: Not so Black and White*. Poster Presentation at the 81st Canadian Psychological Association Convention, Montréal, Quebec. (Conference cancelled due to COVID-19).

INDUSTRY REPORTS

Weststar, J., Kwan, E., & Kumar, S. (November 20, 2019). Developer Satisfaction Survey 2019 Summary Report. International Game Developers Association. <https://igda.org/resources-archive/developer-satisfaction-survey-summary-report-2019/>

RESEARCH EXPERIENCE

University of Western Ontario Research Assistant	Jan 2019 – Present
University of Toronto Lead Research Assistant	May 2015 – Aug 2018
Rotman Management Research Assistant	Feb 2017 – March 2018

TEACHING EXPERIENCE

The University of Western Ontario Teaching Assistant <ul style="list-style-type: none"> • Research Methods in Psychology • Introductory Psychology 	Sept 2018 – April 2020
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VOLUNTEER EXPERIENCE

University of Western Ontario I/O Brownbag Committee Co-chair	Aug 2019– Present
University of Western Ontario I/O Social Committee Co-chair	Aug 2019– Present
University of Western Ontario PGSA Executive	Sept 2019– Present
University of Toronto Psychology Mentor	Oct 2017– April 2018